HARDWARE NETWORKING

Basics Hardware & Networking

Cyber Security (OT)

Cyber Security (IT)

Certified Cloud Security Professionals (CCSP)

Certified Ethical Hacker

CCNA

MICROSOFT AZURE

- Microsoft Azure Fundamentals.
- Microsoft Azure Administrator

Global Service Desk

#1.Basic Hardware & Networking

Overview of Course

You can use this course as the first in a series to get ready for a position as an entry-level IT Support Specialist. Your introduction to the field of information technology, or IT, will take place in this course. You will gain knowledge of the various aspects of information technology, such as computer hardware, the Internet, computer software, troubleshooting, and customer support. This course will introduce you to a wide range of IT topics and is intended to give you a preview of the certificate programme. You'll be able to: after completing this course build a computer from the ground up while understanding the binary system. Selecting and setting up an operating system on a computer comprehend what the Internet is, how it operates, and its effects.

Course Outline

The course covers the following topics including (and this list will be constantly updated):

- Network Layer
- Design issues of Network layer
- Nature of the service provided
- Internal organization
- Routing
- Congestion control
- Internetworking
- Principles of Routing
- Types of routing algorithms
- Classes of routing algorithms
- Properties of routing algorithms

- Optimality principle

#2.Cyber security (OT)

Who will learn?

Introduction to OT (Operational Technology)

Introduction to Distributed Control System (DCS)

- Use Case – Product Manufacturer
- Production Phases
- Discrete vs Process Manufacturing
- Plant / Control
- Distributed Control Systems
- DCS Controllers
- DCS Controller Programming
- Languages Operator station (HMI)
- DCS Layout – Eng WS

Supervisory Control And Data Acquisition (SCADA)

- SCADA main components
- SCADA Server (MTU)
- Programmable Logic Controller (PLC)
- Remote Terminal Unit (RTU)
- Programmable Automation Controller
- (PAC) Intelligent Electronic Device (IED)
- SCADA Alarms
- SCADA Connections

Operational Technology vs Information Technology

- OT Terminology
- Terms under Operational
- Technology IT / OT GAP
- IT Network design
- OT – Level 0
- OT – Level 1

- OT – Level 2
- OT – Level 3
- OT – Level 4
- OT – Level 5
- Purdue Reference Model
- IT Within OT
- Air-gapped OT networks
- IT vs OT

OT Communications and Protocols

- Recap on Sensors and Signals
- Read Value
- Write Value
- Operational Technology Protocols by
- Industry Introduction to Modbus
- Modbus Communication types
- Modbus TCP Type
- PLC Memory Addresses
- PLC Memory Address types and values
- Modbus Request Format
- Modbus RTU and RTU over TCP Format
- Modbus TCP vs RTU
- Modbus TCP Segment
- Modbus Application Protocol Header
- Modbus Protocol Data Unit (PDU)
- Modbus TCP Request
- Decoding Modbus TCP Request
- Modbus Function Codes
- How to read the RFC (Modbus)
- LAB1: Modbus Simulator
- LAB2: Wireshark Analysis of Modbus
- LAB3: Connect HMI to Modbus simulator

Operational Technology Cyber Security Controls

- Network Assists Discovery
- Network Discovery (Agentless)
- Network Discovery (Visual)
- Endpoint Security
- Identity and Access Management (IAM)
- Intrusion Detection
- NGFW and Intrusion Prevention
- Network Access Control
- Secure Remote Access
- OT is insecure by design

- OT Cyber security Compliance

#3.Cyber security (IT)

Module 1: "Introduction To Cryptography"

- Welcome
- The information Security Field
- InfoSec Culture
- Career Opportunities
- Information Security Terms
- Cryptography and VPNs
- Wireshark Introduction
- Binary Arithmetic Basics
- Bitwise Operations
- Hexadecimal Arithmetic

Module 2: "Networking"

- Protocols
- IP
- Routing
- Link Layer Devices and Protocols
- TCP and UDP
- Firewalls and Network Defenses
- DNS
- Wireshark

Module 3: "Web Applications"

- Introduction
- HTTP Protocol Basics
- HTTP Cookies
- Sessions
- Same Origin Policy
- Burp Suite

Module 4: "Penetration Testing"

- Introduction
- Lifecycle of Penetration Test
- Engagement
- Information Gathering
- Foot printing and Scanning
- Vulnerability Assessment
- Exploitation
- Reporting

Module 5: "Introduction to Programming"

- What is programming
- Low and high-level languages
- Programming vs. Scripting
- Basic concepts
- Variables
- Functions
- Conditional Statements
- Loops
- Understanding the Code
- Conclusion

Module 6: "Python"

- What is python
- Variables and types
- Input / Output
- Control flow
- Lists
- Dictionaries
- Functions
- Modules
- Scripting for pen testers
- Network sockets
- Port scanning
- Backdoor
- HTTP
- Login brute forcing
- Python assisted hacking

Module 7: "Command Line Scripting"

- Bash shell
- Bash environment
- Bash commands and programs
- Bash output redirectors and special characters
- Bash conditional statements and loops
- Windows command line
- Windows environment
- Windows commands and programs
- Windows output redirectors and special characters
- Windows conditional statements and loops

Module 8: "PENETRATION TESTING"

- Information gathering
- Introduction
- Open-source Intelligence
- Subdomain enumeration
- Importance of information gathering

Module 9: "Footprinting and scanning"

- Mapping network
- OS fingerprinting
- Port Scanning

Module 10: "Vulnerability Assessment"

- Vulnerability assessment
- Nessus

Module 11: "Web Application Attacks"

- Introduction
- HTTP/S Protocol Basics
- Web server fingerprinting
- HTTP Verbs
- Directories and file enumeration
- Google Hacking

- Cross Site Scripting (XSS)
- SQL Injections
- Encoding
- Web application proxies
- Other common web attacks
- File and resource attacks

Module 12: "System Attacks"

- Malware
- Viruses
- Trojan Horses
- Backdoors
- Rootkits
- Bootkits
- Adware
- Spyware
- Greyware
- Dialer
- Keylogger
- Bots
- Ransomware
- Data-stealing malware
- Worms

Module 13: "Password attacks"

- Brute force algorithm
- Brute forcing weaknesses
- John the Ripper
- Dictionary attacks
- Hashcat
- Conclusion

Module 14: "Buffer Overflow Attacks"

- Buffers
- Stack
- The stack in applications
- How buffer overflow attacks work

Module 15: "Network Attacks"

- Authenticating Cracking
- Brute force vs. Dictionary Attacks
- Weak and default credentials
- Authentication cracking tools
- Hydra

Module 16: "Windows shares"

- NetBIOS
- Shares
- UNC Paths
- Administrative shares
- Badly configured shares

Module 17: "Null Sessions"

- Enumerating windows shares
- Checking for Null Sessions
- Exploiting Null sessions
- About null sessions

Module 18: "ARP Poisoning"

- ARP poisoning actors
- Gratuitous ARP replies
- Forwarding and mangling packets
- Local to remote Man in the Middle
- DsniffArpspoof

Module 19: "Metasploit"

- MSFConsole
- Identifying a vulnerable service
- Searching
- Configuring an exploit
- Configuring a payload
- Running an exploit

Module 20: "Meterpreter"

- Bind and reverse
- Launching meterpreter
- Sessions
- Information gathering with meterpreter
- Privilege escalation
- Dumping the password database
- Exploring the victim system
- Uploading and downloading files
- Running OS Shell
- Beyond Remote Code Execution

Module 21: "Forensic Investigation"

- Computer Forensics Today
- Computer Forensics Investigation Process
- Hard Disks & File Systems
- Data Acquisition
- Anti-Forensics Techniques
- Operating System Forensics
- Network Forensics
- Web Attack Investigation
- Database Forensics
- Forensics with the Cloud
- Malware
- Email Investigation
- Mobile
- Forensic Reporting
- Course Summary

#4.Certified Cloud Security Professionals (CCSP)

CCSP COURSE OVERVIEW

To access greater efficiency, scalability, and speed, businesses are migrating their applications to the cloud. However, security has also become a top priority as the number of applications grows, which has increased demand for qualified cloud security professionals. This course is your next step toward passing the Certified Cloud Security Professional (CCSP) exam if you want to pursue a career in cloud computing security and can prove that you understand cloud concepts and fundamentals well.

Who can do this Course:

- IT and Cloud Security Experts
- Enterprise Architects
- Security Consultants
- Systems Engineers
- Security Administrators.

CCSP Course Syllabus:

Module 1: Understand Cloud Computing Concepts

- Introduction to Cloud Computing
- Benefits of Cloud Computing
- Cloud Computing Definitions
- Cloud Computing Roles
- Key Cloud Computing Characteristics
- Building Block Technologies

Module 2: Describe Cloud Reference Architecture

- Cloud Reference Model
- Conceptual Reference Model
- Cloud Computing Activities
- Cloud Service Capabilities
- Deployment Models
- Cloud Shared Considerations
- Impact of Related Technologies

Module 3: Understand Security Concepts Relevant to Cloud Computing

- Cryptography
- Key Management
- IAM and Access Control
- Data and Media Sanitization
- Virtualization Security
- Common Threats
- Network Security

Module 4: Understand Design Principles of Secure Cloud Computing

- Cloud Secure Data Lifecycle
- Cloud-Based Disaster Recovery (DR) Planning
- Business Continuity Planning
- Cost-Benefit Analysis
- Security Considerations for Different Cloud Categories

Module 5: Identify Trusted Cloud Services

- Certification Against Criteria

Module 6: Describe Cloud Data Concepts

- Cloud Data Life Cycle Phases
- Data Dispersion

Module 7: Design and Implement Cloud Data Storage Architectures

- Storage Types
- Threats to Storage Types

Module 8: Design and Apply Data Security Technologies and Strategies

- Encryption
- Key Management
- Hashing
- Data De-identification
- Data Masking
- Tokenization
- Data Loss Prevention (DLP)

Module 9: Implement Data Discovery

- Structured Data
- Unstructured Data

Module 10: Implement Data Classification

- Mapping
- Labelling

- Sensitive Data

Module 11: Design and Implement Information Rights Management (IRM)

Objectives

- Provisioning
- Access Models
- Appropriate Tools

Module 12: Plan and Implement Data Retention, Deletion and Archiving Policies

- Data Protection Policies
- Data Retention Policies
- Data Deletion Procedures and Mechanisms
- Data Archiving Policies
- Legal Hold

Module 13: Design and Implement Auditability, Traceability and Accountability of Data Events

- Definition of Event Sources
- Requirement of Identity Attribution
- Logging
- Storage and Analysis of Data Events
- Chain of Custody and Nonrepudiation

Module 14: Comprehend Cloud Infrastructure Components

- Cloud Infrastructure
- Physical Environment
- Network and Communications
- Compute Parameters of a Cloud Server
- Virtualization
- Storage
- Management Plane

Module 15: Design a Secure Data Centre

- Logical Design
- Physical Design
- Environmental Design

Module 16: Analise Risks Associated with Cloud Infrastructure

Module 17: Design and Plan Security Controls

Module 18: Plan Disaster Recovery and Business Continuity Management

Module 19: Advocate Training and Awareness for Application Security

Module 20: Describe the Secure Software Development Life Cycle (SDLC) Process

Module 21: Apply the Secure Software Development Life Cycle (SDLC)

Module 22: Apply Cloud Software Assurance and Validation

- Functional Testing
- Security Testing Methodologies

Module 23: Use Verified Secure Software

Module 24: Comprehend the Specifics of Cloud Application Architecture

Module 25: Design Appropriate Identity and Access Management (IAM) Solutions

Module 26: Implement and Build Physical and Logical Infrastructure for Cloud Environment

Module 27: Operate Physical and Logical Infrastructure for Cloud Environment

Module 28: Manage Physical and Logical Infrastructure for Cloud Environment

Module 29: Implement Operational Controls and Standards

Module 30: Support Digital Forensics

Module 31: Manage Communication with Relevant Parties

- Vendors
- Customers
- Partners
- Regulators
- Other Stakeholders

Module 32: Manage Security Operations

- Security Operations Center (SOC)
- Log Capture and Analysis

Module 33: Articulate Legal Requirements and Unique Risks within the Cloud Environment

Module 34: Understand Privacy Issues

Module 35: Understand Audit Process, Methodologies, and Required Adaptations for a Cloud Environment

Module 36: Understand Implications of Cloud to Enterprise Risk Management

Module 37: Understand Outsourcing and Cloud Contract Design

#5. CERTIFIED ETHICAL HACKER

Overview of course

Mecronics Info Tech offers this ethical hacker course because security is a major concern in the global IT industry, particularly given how rapidly the IT market is growing despite the current economic uncertainties. While adhering to security guidelines and best practises is crucial, they cannot ensure that your data will remain secure. Using real-world hacking tools and methodologies, ethical hacking and countermeasures test and assess

What you'll learn

- Learn the latest version of CEH with updated information including concepts, methodologies and tools
- Lab manuals in CEH V10 provide step-by-step walk-throughs of highly technical concepts that enforce the learning.
- Focus on the attacks targeted to mobile platform and tablet computers and covers countermeasures to secure mobile infrastructure.

Syllabus

Module 1: Cloud Computing & Microsoft Azure Fundamentals

- Introduction to Azure
- Azure Regions and Data Centres
- Different segments SaaS, PaaS, and IaaS

Module 2: Understanding of Microsoft Azure portal

- Introduction to all Azure services
- Windows Azure Subscription
- Setting Up a Trial Subscription

Module 3: Azure Virtual Machines

- Operating System Images Supported
- Virtual Machine instances
- Azure VM types and Pricing
- Types of Provisioning
- Disks & Images
- Virtual Machine management, automation and scripting
- Cloud Service and Resource Model Deployment
- VM Availability using Availability Sets
- Setting up VM in Availability set using Load Balanced Endpoint

Module 4: Introduction to Azure Virtual Network and Services

- Types of Azure Virtual Network VNET to VNET, point-to-site and site-to-site, Express Route
- Creating Virtual Networks in Azure
- Azure Subnet and IP ranges
- Endpoints
- Load Balancing Endpoints
- Introduction to Azure Traffic Manager
- Available options in Azure Traffic Manager
- Understanding of Deployment Traffic Manager
- Understanding Network ACL and Network Security Group Setting up Private and Public IP

Module 5: Overview of Microsoft Azure Storage

- Storage Account
- Storage Account Replication Techniques
- Protocols and Consistency Model
- Type of Azure Storage Account
- Storage Services Blob, Table, queue, File
- Azure CDN Services, Managed and Unmanaged Disk

Module 6: Manage Azure Active Directory (AD)

- Azure Architecture Center
- Cache-aside pattern
- Azure SQL DB
- Azure Data Lakes
- Create and Deploy Azure Data Lake and CosmosDB
- Cloud design patterns
- Sharding Pattern
- Azure Elastic Pool
- Azure Data Factory &CosmosDB

Module 7: Manage App Service Plans

- App Service Overview
- App Service monitoring overview
- Web Role and Worker Role

Module 8: Azure Backup and Site Recovery

- Azure Vaults
- Configuring backups
- Data Protection Manager
- Azure Site Recovery and Disaster Recovery
- On Premise Migration using Recovery Services

Module 9: Configure Server less Computing

- Server less Computing, Functions and Logic Apps

Module 10: Manage App Services

- App Settings
- Deployment Slots

Module 11: Azure Container Service

- Introduction to Azure Container Service
  -
  - Overview of Containers
  - Introduction to Azure Container Registry
  - Azure Kubernetes Service

#6.CCNA

CISCO CERTIFIED NETWORK ASSOCIATE (CCNA)

Overview of CCNA Course

This course is for you if you want to ace the Cisco Certified Network Associate CCNA exam and launch a successful IT and networking career! It provides you with a thorough understanding of all the ideas and subjects required to pass the Cisco CCNA 200-301 exam and obtain the most in-demand networking certification available today. It provides a simple, organised method for accelerating your progress toward mastering Cisco networking to the CCNA level and beyond.

What you will Learn

This course has been created for anyone interested in networking who wants to gain a foundational understanding of the subject in order to start a career in networking. The ideas covered in this course can be directly applied to numerous professional certifications, such as the Cisco Certified Network Associate (CCNA).

You'll learn a lot about subjects like IP addressing, IP subnetting, routing, switches, VLANs, spanning trees, network address translation, wireless, and much more in this course.

Additionally, you will discover more about the most recent developments in networking, such as Open Flow and Software Defined Networking.

CCNA Course Outline:

The course covers the following topics including (and this list will be constantly updated):

- Get Started with Cisco Command-Line Interface (CLI)
- Observe How a Switch Operates
- Perform Basic Switch Configuration
- Implement the Initial Switch Configuration
- Inspect TCP/IP Applications
- Configure an Interface on a Cisco Router
- Configure and Verify Layer 2 Discovery Protocols
- Implement an Initial Router Configuration
- Configure Default Gateway
- Explore Packet Forwarding
- Troubleshoot Switch Media and Port Issues
- Troubleshoot Port Duplex Issues
- Configure Basic IPv6 Connectivity
- Configure and Verify IPv4 Static Routes
- Configure IPv6 Static Routes
- Implement IPv4 Static Routing
- Implement IPv6 Static Routing
- Configure VLAN and Trunk
- Troubleshoot VLANs and Trunk
- Configure a Router on a Stick
- Implement Multiple VLANs and Basic Routing Between the VLANs
- Configure and Verify Single-Area OSPF
- Configure and Verify Ether Channel
- Improve Redundant Switched Topologies with Ether Channel
- Configure and Verify IPv4 ACLs
- Implement Numbered and Named IPv4 ACLs
- Configure a Provider-Assigned IPv4 Address
- Configure Static NAT

- Configure Dynamic NAT and Port Address Translation (PAT)
- Implement PAT
- Log into the WLC
- Monitor the WLC
- Configure a Dynamic (VLAN) Interface
- Configure a DHCP Scope
- Configure a WLAN
- Define a Remote Access Dial-In User Service (RADIUS) Server
- Configure and Verify NTP
- Configure System Message Logging
- Create the Cisco IOS Image Backup
- Upgrade Cisco IOS Image
- Configure WLAN Using Wi-Fi Protected Access 2 (WPA2) Pre-Shared Key (PSK) Using the GUI
- Secure Console and Remote Access
- Enable and Limit Remote Access Connectivity
- Secure Device Administrative Access
- Configure and Verify Port Security
- Implement Device Hardening

#7 MICROSOFT AZURE

I. MICROSOFT AZURE FUNDAMENTALS

Course Overview:

Microsoft Azure Fundamentals Training Course will familiarize you with the main principles of cloud computing and how they have been implemented in Microsoft Azure. This course will get you up to speed on Azure services, security, privacy, compliance, trust, pricing, and support.

What you will Learn:

- Prove your knowledge of cloud computing concepts, models, and services, such as public, private, and hybrid cloud, in addition to infrastructure as a service
- Show your expertise on how Azure supports security, privacy, compliance, and trust.

Syllabus:

Introduction to Azure fundamentals

- Discuss Azure fundamental concepts
- Describe core Azure architectural components
- Core Azure Services

Azure database and analytics services

- Azure compute services
- Azure Storage services
- Azure networking services

Core solutions and management tools on Azure

- Choose the best AI service for your needs
- Choose the best tools to help organizations build better solutions
- Choose the best monitoring service for visibility, insight, and outage mitigation
- Choose the best tools for managing and configuring your Azure environment
- Choose the best Azure server less technology for your business scenario
- Choose the best Azure service for your application

General security and network security features

- Protect against security threats on Azure

Secure network connectivity on Azure

- Secure access to your applications by using Azure identity services
- Build a cloud governance strategy on Azure
- Examine privacy, compliance, and data protection standards on Azure

Describe Azure cost management and service level agreements

- Plan and manage your Azure costs
- Choose the right Azure services by examining SLAs and service lifecycle

II. MICROSOFT AZURE ADMINISTRATOR

Course Overview:

Microsoft Azure is ideal for the IT professional who aims to make their career in Cloud Computing. This Azure training course covers the advanced activities for working with the Azure platform. Microsoft Azure is a cloud computing service created by Microsoft for building, testing, deploying, and managing applications and services through Microsoft-managed data centres.

What you Will Learn:

How to manage Azure resources, configuring and deploying virtual machines and networks

Course Content:

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- Introduction to Azure Container Service
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- Introduction to Azure Container Registry
- Azure Kubernetes Services

#8 Global Service Desk

Mecronics Info Tech offers a brief, beginner-friendly course that teaches professional communication and customer relationship skills over the course of two months of blended virtual learning. This course is free of charge for qualified students and is available to students across India.

The Global Customer Service Desk Specialist career aspiration of the student will take flight thanks to this course's assistance in teaching them MNC's metrics for the IT/ITES industry.

BENEFITS

- Align your business practises with international norms to provide your clients with dependable, superior service and support.
- Recognize the advantages of using a service catalogue for responsibility ownership and take advantage of them.
- Implementing customer surveys, service level agreements, and operational level agreements will help to promote a culture of continuous service improvement.
- Using the appropriate metrics to evaluate Service Desk performance will help higher management receive more insightful information.

Course content

- The Service Desk
- The Service Desk and Support Analyst
- Best Practices
- Policies and Legislation
- Service Commitments and Ethics
- Service Attitude
- Teamwork
- Business Relationships
- Positive Approach and Attitude
- Process Management
- Incident Management
- Incident & Service Request Recording
- Request Fulfilment
- Escalation
- Status Updates

- Problem Management
- IT Change Management
- Service Level Management
- Service Catalog
- Service Delivery Models
- Knowledge Management
- Information Security Management
- IT Service Continuity Management
- Quality Management
- Customer Satisfaction Surveys
- Service Desk Metrics and Statistics