دليل الدورات التدريبية

في

مركز التميز السوري الهندي لتقانة المعلومات

TRAINING GUIDE

For

INDIA-SYRIA Centre of Excellence for Information Technology

2010 - 2011

INDEX

Page No.	Bridge course for TRACK A Information Security	Course code	Course duration	Course cost SP
14	**Fundamental of computers and networks**	BC-101	30 hrs	
14	**Concepts of Operating System and Administration**	BC-102	50 hrs	
15	**Web services**	BC-103	40 hrs	
15	**Concepts of Information and Security System**	BC-104	40 hrs	

Page No.	Bridge course for Track B Information System	Course code	Course duration	Course cost SP
17	**Overview of networking**	BC-201	20 hrs	
17	**Computer Fundamentals**	BC-202	20 hrs	
18	**Database Concepts**	BC-203	30 hrs	
18	**Operating system Concepts**	BC-204	20 hrs	
18	**Fundamentals of Programming**	BC-205	30 hrs	
19	**Oops concepts using C++**	BC-206	40 hrs	

Page No.	Bridge course for Track C Networking, Operating System and Info-structure	Course code	Course duration	Course cost SP
20	***Computer Fundamental***	BC-301	20 hrs	
20	***PC Component***	BC-302	20 hrs	
20	***PC Trouble shooting***	BC-303	20 hrs	
21	***Operating System Administration***	BC-304	50 hrs	
21	***Introduction to networking***	BC-305	50 hrs	

Track A
Information Security

Prerequisites

Any person who has functional knowledge equivalent to CCNA, MCSE, RHCE etc. and hands-on experience of Network Administration.

Objective of the track A courses

The objective of these courses is to enable the student to understand the concepts of network security and learn the techniques of detecting the attacks and securing a network from internal and outside attacks. At the end of the course, the student will be able to understand a variety of generic security threats and vulnerabilities, understand the principles and practices of cryptographic techniques identify and analyze particular security problems for a given application and apply appropriate security techniques to solve security problems.

Course 1: Ethical Hacking

Duration : 40 hours

Minimum pre-requisite: Sound knowledge of computing fundamental, operating system, networking and system administration.

Experience: Computer/IT graduate with 1-2 years of experience.

Topics:

- Introduction to Ethical hacking
- Foot-printing
- Scanning
- Enumeration
- System hacking
- Trojans & Backdoor
- Sniffers
- Denial of Service
- Social Engineering
- Session Hijacking
- Hacking Web Servers
- Web Application Vulnerabilities
- Web based password Cracking Techniques
- SQL Injection
- Hacking Wireless Networks
- Viruses & Worms
- Physical Security
- Linux Hacking
- Evading Firewalls, IDSs and Honeypots
- Buffer Overflows
- Cryptography
- Penetration Testing

Course 2: Computer Forensics

Duration : 40 hours

Minimum pre-requisite: Sound knowledge of computing fundamental, operating system, networking and system administration.

Understanding of Computer crime scenes

Experience: Computer Science/IT graduate with 2-3 years of experience

Topics:

- How to perform forensic examination on the network and on the computer
- Investigation of a network intrusion attack
- Analysis of computer disk
- Extracting hidden information Recovering data
- Forensic tools and utilities

Course 3: Incident handling

Duration : 40 hours

Minimum pre-requisite: Sound knowledge of computing fundamental, operating system, networking and system administration.

Knowledge of information System and Security

Experience: Computer Science/IT graduate with 2-3 years of experience

Topics:

- Strategies for incident response
- Overview of scans, probes, and intruder attacks
- Working with other incident response team members
- Techniques for gathering, tracking, and categorizing incident information
- Analyzing incident reports
- Handling common attacks such as e-mail spoofing or spamming, denial of service attacks, and malicious code.
- Coordinating organizational response
- Cryptographic and data security issues

Course 4: Advanced Intrusion Analysis

Duration : 40 hours

Minimum pre-requisite: Sound knowledge of computing fundamental, operating system, networking and system administration.

Good knowledge of routing, TCP/IP, security fundamentals, firewall is essential.

Experience: Computer Science/IT graduate with 2-3 years of experience.

Topics:

- Routing
- IP Sec
- Writing TCP dump filters
- Examining datagram fields with TCP dump

- Web Application Vulnerabilities
- TCP dump output analysis
- Introduction to Snort
- Snort-Modes of operation
- Writing Snort rules
- Configuring Snort as an IDS
- Snort output analysis
- Advanced Snort topics
- Intrusion Detection Architecture
- Attacks-an-in-depth study
- Introduction to the analysis process
- Common errors and how to avoid them
- Traffic analysis

Course 5: Malware analysis and writing secure application programs

Duration : 40 hours

Minimum pre-requisite: Sound knowledge of computing fundamental, operating system, networking and system administration.

Knowledge of programming Information system, and web services is essential.

Experience: Computer Science/IT graduate with 2-3 years of experience.

Topics:

- Introduction to Malware
- Viruses and Worms
- Backdoors, Trojans and Rootkits
- Bots & Botnets
- Mobile Malware
- Identifying & Defending against Malware
- Malware Analysis
- Application attack vectors ad details
- Principals of Secure Coding: Fundamentals, Controls and Strategies
- Key security aspects
- Defense plans
- Code review methodologies
- Scanning for vulnerabilities
- Applying validations
- XML and Web Services based attacks
- Client side coding based attacks

Course 6 : Building and deploying PKI

Duration : 40 hours

Minimum pre-requisite: Sound knowledge of computing fundamental, operating system, networking and system administration.

Knowledge of information System and Security.

Experience: Computer Science/IT graduate with 2-3 years of experience.

Topics:

- Certificates and signatures
- Certification Authorities and Directories
- Leveraging certificates in applications
- Registration Authority(RA)
- Linking with PKI Repository
- Building a hierarchical trust model
- Product Comparisons and Demonstrations
- Overcoming Pitfalls in Public Key encryption and Certificate management
- Case Studies
- Deploying a PKI

Track B

Information Systems: development & management and applications

Prerequisite for Track B courses

Knowledge of Computers, operating system, network fundamentals, at least one programming language and programming techniques

Course Objective of Track B

The objective of this track courses are to get initiated into the domain of software development using the tools and techniques of Software Engineering. These courses will enable the students to understand the requirements of information system, services and able to design, develop and manage.

Course 1: ITIL Foundation (V3)

Duration : 24 hours

Minimum pre-requisite: Good understanding of networking concepts, operating system and hands-on to the Windows OS and Linux OS.

Experience: Should have 2-3 years of IT exposure.

Topics:

- Introduction to ITIL® and best practice
- Service Strategy
- Service Design
- Service Transition
- Service Operation
- Continual Service Improvement
- ITIL Qualification scheme Awareness

Course 2:Software Engineering

Duration : 40 hours

Minimum pre-requisite: Good understanding computers and operating system, knowledge of programming language, concepts of object oriented programming and database.

Experience: Graduate in Computer with 1-2 years experience in programming

Topics :

- Why SE?
- Software: A Process
- Software Life Cycle Models
- Various Phases in s/w Development
- Iterative and Incremental Development
- Risk Analysis and Management
- Software Quality Assurance
- Introduction to Coding Standards
- Project Management
- Introduction to MS Project
- Case Study

Course 3: Software quality assurance

Duration : 40 hours

Minimum pre-requisite: Good understanding computers and operating system, knowledge of programming language, concepts of object oriented programming and database.

Experience: Graduate in Computer with 1-2 years experience in programming and knowledge of software engineering.

Topics:

- The Software Quality Challenge
- What is Software Quality?
- Software Quality Factors
- The Components of the Software Quality Assurance System - overview.
- Contract Review
- Development and Quality Plans
- Integrating Quality Activities in the Project Life Cycle Reviews
- Software Testing - Strategies
- Software Testing - Implementation
- Assuring The Quality of Software Maintenance
- Assuring The Quality of External Participants' Parts
- Case Tools and their Affect on Software Quality.
- Procedures and Work Instructions.
- Supporting Quality Devices
- Staff Training, Instructing and Certification.
- Preventive and Corrective Actions.
- Configuration Management
- Documentation and Quality Records Controls.
- Project Progress Control
- Software Quality Metrics
- Software Quality Costs
- SQA Standards
- ISO 9001 Certification
- Software Process Assessment
- Management and its Role in Quality Assurance
- The Software Quality Assurance Unit.
- SQA Trustees and Committees

Course 4: e-Government strategy development

Duration : 40 hours

Minimum pre-requisite: Good understanding of public administration.

Experience: Graduate with 2-3 years experience in administration.

Topics:

- Introduction to E-Government
- Building a Case for E-Government: The Pros and cons
- E-Government Concepts
- Creating a Blueprint for E-Government
- Policy Creation and Analysis
- Designing and implementing E-Government
- Case Studies
- E-Government and The Public Sector
- Enabling Environment for E-Government
- Computerization: Personnel and Infrastructure
- Public Service Delivery: Improving Standards Through E-Government
- Leadership, Change and Challenges
- Freedom of Information and Transparency
- E-Government and World Governments
- Achieving Global Standards

Track C

Networking, operating systems and infrastructure

Prerequisite for Track C courses

Knowledge of Computers, operating system and network fundamentals. Hands on experience on Windows and Linux server are desirable.

Course Objective of Track C

Experience: The objective of this track courses is to develop/manage data center independently

Course 1: Building and maintaining data centers

Duration : 40 hours

Minimum pre-requisite: Sound knowledge of fundamentals of computer networks

Experience: Graduate in Computer/IT/Electronics/Electrical with 1-2 years of experience in networking

Topics:

- The Data Center, its Importance and Causes or Downtime
- Data Center Standards and Best Practices
- Building Construction
- Raised Floor/Suspended Ceiling
- Power Infrastructure
- Electro magnetic Fields
- Cooling Infrastructure
- Light Standards
- Fire Suppression
- Designing a Scalable and Secure Network Infrastructure
- Data Center Monitoring
- MTBF/MTTR
- Operational Security and Safety Practices
- Labeling
- Documentation
- Maintenance Contracts/OLA

Course 2: Management of data center systems

Duration : 60 hours

Minimum pre-requisite: Sound knowledge of fundamentals of computer networks, operating system and administration, knowledge of ITIL foundation

Experience: Graduate in Computer/ IT/ Electronics/ Electrical with 1 to 2 years of experience in networking

Topics:

- Deployment, Virtualization, and Systems Management
- Directory Services and Authentication

- Applications on Open source Linux operating system
- IT Service Management Based on ITIL.

Course 3: Advanced management and data center systems

Duration : 40 hours

Minimum pre-requisite: Sound knowledge of operating system and administration

Experience: Graduate in Computer/ IT/ Electronics/ Electrical with 1 to 2 years of experience in networking

Topics:

- Clustering and storage management
- Applications on Open source Linux operating system

Course 4: Wireless networks

Duration : 40 hours

Minimum pre-requisite: Sound knowledge of fundamentals of computer networks

Experience: Graduate in Computer/ IT/ Electronics/ Electrical with 1 to 2 years of experience in networking

Topics:

- Introduction to Wireless LANs
- Organizations and Vendors
- Standards and Applications
- Radio Frequency(RF) fundamentals
- Spread Spectrum technologies
- Access Points, Service Sets, and the Distribution System
- Wireless Bridges
- Wireless Ad Hoc networks
- Antennas and Accessories
- RF Propagation
- Wireless network organizations and Standards
- 802.11 Network Architecture
- Physical and MAC Layers
- Bandwidth Control, Network management and AAA
- Routers, Gateways, Switches, and wi-fi
- Troubleshooting Wireless LANs
- Wireless LAN Security
- WLAN security solutions
- VPN-based security solutions
- RF Site surveys

Course 5: IP telephony

Duration : 40 hours

Minimum pre-requisite: Sound knowledge of fundamentals of computer networks

Experience: Graduate in Computer/IT/Electronics/Electrical with 1-2 years of experience in networking

Topics:

- IP telephony strategy
- H323 standard
- Multipoint, multimedia conferencing
- Video conferencing standards
- H248 protocols
- Soft switch concepts
- Introduction to NGNs & Session Initiation Protocol (SIP)

Bridge course for TRACK A
Information Security

List of Modules:

This course is divided into modules as below:

Sr. No.	*Module Name*	*Hours*
1.	**Fundamental of computers and networks**	**30**
2.	**Concepts of Operating System and Administration**	**50**
3.	**Web services**	**40**
4.	**Concepts of Information and Security System**	**40**
	Total	**160**

Course Contents:

Fundamental of computers and networks 30 hrs (20 hrs Theory + 10 hrs Lab)

- Introduction to PC architecture
- Classification of bus standards (ISA, PCI, PCMCIA)
- Classification of Add-on cards like Graphics, CAD, Memory etc.
- Architecture of Operating System
- Introduction to communication system, issues in Computer Networking
- Overview of Transmission Media
- OSI Layers, TCP/IP Models
- Overview of LAN (local area networks)
- Overview of WAN (wide area networks)
- Discussion of Networking Protocols
- IP Addressing and Routing
- Overview of TCP, UDP, IP, ICMP, Ethernet Packets, Hub, Switch, Router

Concepts of Operating System and Administration 50 hrs (25 hrs Theory + 25 hrs Lab)

- Overview of windows operating system
- Overview of Administrative Tasks and Tools
- Installation of windows operating system
- Network Configuring
- Designing a Windows XP/Vista/2008 network
- Implementing the TCP/IP protocol
- Configuring Sites
- Implementation of infrastructure of windows networks
- File system and disk management
- Implementation, planning and maintaining of active directory infrastructure
- Configuring Services
- Registry settings

- System Configuration Settings
- Manage Users
- Manage the system
- Supporting address translation (NAT)
- Introduction to Performance Tuning
- Maintenance and troubleshooting
- Introduction to Microsoft Windows Vista/XP/2008 security
- Security issues at the Active Directory level
- Authenticating users and clients
- Planning the administrative structure for security groups
- Using smart cards for network authentication
- Securing file systems with EFS encryption
- Evaluating and analyzing workstation security
- Securing network services: DNS, DHCP, RIS, SNMP and TS

Web services ***40 hrs (20hrs Theory + 20 hrs lab)***

- Introduction to Web services
- What are the web services?
- What is the need of Web services?
- When to implement Web Services
- How to Implement Web Services
- Introduction to XML
- Microsoft web services
- SOAP
- Deploying web services

Concepts of Information and Security System ***40 hrs (20hrs Theory + 20 hrs lab)***

- Basics of Information System
- Threats of Information System
- Threats and attacks
- Classification of Threads and attacks
- Protecting Information System Security
- Security in mobile and Wireless Computing
- Credit Card frauds in mobile and wireless Computing
- Security Policies and Measures in Mobile Computing
- Information Security Management
- Security Policy, Standards
- Firewalls
- Define the Types of Firewalls

- Application Layer Firewalls
- Packet Filtering Firewalls
- Hybrids
- Introduction to scripting language perl

Bridge course for Track B
Information System

List of Modules:

This course is divided into modules as below:

Sr. No.	Module Name	Hours
1.	Overview of networking	20
2.	Computer Fundamentals	20
3.	Database Concepts	30
4.	Operating system Concepts	20
5.	Fundamentals of Programming	30
6.	Oops concepts using C++	40
	Total	160

Course Contents:

Overview of networking — 20 hours (12hrs Theory + 8 hrs lab)

- Characteristics of Computer Network
- Data Transmission Modes
- Simplex, Half-Duplex, Full-Duplex
- Introduction to Transmission Media
- Twisted cable
- Coaxial cable
- Microwave cable
- Optical Fibers
- Satellite Communication
- Introduction to Network Topologies
- Star, Ring, Bus, Hybrid
- Introduction to LAN and WAN
- Introduction to OSI Model
- Introduction to Networking Hardware
- NIC, cables, Hub etc
- Introduction to Windows 2003 Networking Features
- Sharing Recourses like Printers, Storage devices, etc

Computer Fundamentals — 20 hours (20hrs Theory)

- Evolutions of computers
- Computer generations
- Computer organization
- Primary and Secondary storage
- Input-output devices
- Computer software
- Operating systems

- Data communications and computer networking
- Multimedia
- Classification of computers

Database Concepts	***30 hours (14hrs Theory + 16 hrs lab)***

- Introduction to Databases
- Principles of database management
- Need of RDBMS etc
- Client/Server Computing
- RDBMS Technologies
- Codd's Rules
- Data Models
- Normalization Techniques
- ER Diagrams
- Data Flow Diagrams
- Database recovery & backup
- SQL Queries and Forms

Operating system Concepts	***20 hours (20hrs Theory)***

- What is an OS?
- Processes
- Memory management
- File Systems
- General OS architecture
- Scheduling & Synchronization
- Virtual Memory and Paging
- Threading concepts

Fundamentals of Programming	***30 hours (20 hrs Theory + 10*** hrs lab)

- Algorithms
- Flowcharts
- Computer languages
- System implementation and operation
- File organizations
- Data processing

Oops concepts using C++	*40 hours (20hrs Theory + 20 hrs lab)*

- OOP concepts
- Programming constructs
- Access Specifiers
- Classes and Objects
- Constructor and Destructor
- Overloading
- Inheritance
- Polymorphism
- File and Streams
- Templates

Bridge course for Track C
Networking, Operating System and Info-structure

This course is divided into modules as below:

S. No.	*Module Name*	*Hours*
1.	*Computer Fundamental*	*20*
3.	*PC Component*	*20*
4.	*PC Trouble shooting*	*20*
5.	*Operating System Administration*	*50*
6.	*Introduction to networking*	*50*
	Total	*160*

Course Contents:

Computer Fundamentals — *20 hrs (10 hrs Theory + 10 hrs lab)*

- Introduction to Windows XP/ Vista
- Commonly used commands and processes in Windows
- Introduction to Computers
- Types of Computers
- Introduction to Input Output Devices
- Introduction to Storage Devices
- Hardware and Software
-

PC Component — *20 hrs (20 hrs lab)*

- Fundamental of PC Technology
- Microprocessors
- Memories
- Motherboards
- Cooling and Protection
- Storage Devices
- I/O Ports and Devices
- Pointing Devices
- Printer

PC Trouble shooting — *20 hrs (20 hrs lab)*

- Advance Trouble shooting
- Switch mode power supply
- Power supply maintenance
- Troubleshooting tools and techniques
- Data Recovery and Disaster

Operating System Administration — *50 hrs (20hrs Theory + 30 hrs lab)*

(a) Windows Operating System

- Overview of windows operating system
- Overview of Administrative Tasks and Tools
- Installation of windows operating system
- Network Configuring
- Implementation of infrastructure of windows networks
- File system and disk management
- Implementing and administering Active Directory
- Manage Users
- Introduction to Performance Tuning
- Maintenance and troubleshooting
- Introduction to Microsoft Windows Vista/XP/2003 security
- Security issues at the Active Directory level
- Authenticating users and clients

(b) Linux Operating System

- Systems Concepts
- Startup Files
- Linux and Solaris boot process
- Installation of sun Solaris & Linux
- The interactive Anaconda installer
- A hands-free method of installation
- Controlling Services
- User administration of Linux
- Understanding network address
- Introduction to Performance Tuning
- Maintenance and troubleshooting
- The Threat Model and Protection Methods
- Basic Service Security
- Network Authentication: RPC, NIS and Kerberos

Introduction to networking — *50 hrs (24hrs Theory + 26 hrs lab)*

- Introduction to communication system, issues in Computer Networking
- Overview of Transmission Media
- OSI Layers, TCP/IP Models
- Overview of LAN (local area networks)
- Overview of WAN (wide area networks)
- Discussion of Networking Protocols
- IP Addressing and Routing

- TCP, UDP, IP, ICMP, Ethernet Packets, Hub, Switch, Router
- wireless networking
- hierarchical design principles, including network protocols,
- addressing, and subnets
- Router and switch protocols Configuration, including routing protocols
-