MeitY (EICT Academy , NIT Patna) sponsored 5-Day (one week)

Faculty Development Program

Cyber Security, Cryptography, Blockchain & Intrusion Detection Systems

Duration: 5 Days (8 Hours per Day)

Venue: Jharkhand University of Technology (JUT), Ranchi

DAY 1: Cyber Security Fundamentals, Kali Linux & Python Basics

Date: Day 1

Time	Activity
09:00 – 10:00 AM	Registration of Participants
10:00 – 10:45 AM	Inaugural Session, Welcome Address, Chief Guest Address, Vote of Thanks
10:45 – 11:15 AM	Tea Break
11:15 – 12:30 PM	Introduction to Cyber Security: Concepts, Threat Landscape, Cyber Attacks
12:30 – 01:30 PM	Cyber Law and Protection
01:30 – 02:15 PM	Lunch Break
02:15 – 03:30 PM	Linux Commands and File System Management
03:30 – 04:30 PM	Kali Linux Environment and Installation
04:30 – 05:30 PM	Python Programming Basics for Cyber Security
05:30 – 06:00 PM	Hands-on Lab: Kali Linux Setup & Password Generator Mini Project

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DAY 2: Cryptography & Secure Communication

Time	Activity
09:00 – 10:30 AM	Fundamentals of Cryptography and Information Security
10:30 – 10:45 AM	Tea Break
10:45 – 12:15 PM	Symmetric and Asymmetric Encryption Techniques
12:15 – 01:15 PM	Hash Functions, Digital Signatures and Message Integrity
01:15 – 02:00 PM	Lunch Break
02:00 – 03:30 PM	Secure Communication Protocols and Applications Practical
03:30 – 04:30 PM	Hands-on: Caesar Cipher, Encryption & Decryption
04:30 – 05:30 PM	Hash Generation, Verification and Digital Signatures
05:30 – 06:00 PM	Cryptography Challenge Exercise & Discussion

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DAY 3: Blockchain Technology & Smart Contracts

Time	Activity
09:00 – 10:30 AM	Introduction to Blockchain Technology and Distributed Ledger Systems
10:30 – 10:45 AM	Tea Break
10:45 – 12:15 PM	Blockchain Architecture, Blocks, Hashes and Consensus Mechanisms
12:15 – 01:15 PM	Smart Contracts and Decentralized Applications (DApps)
01:15 – 02:00 PM	Lunch Break
02:00 – 03:30 PM	Blockchain Use Cases in Governance, Finance and Industry
03:30 – 04:30 PM	Hands-on: Blockchain Simulation
04:30 – 05:30 PM	Smart Contract Development using Remix IDE
05:30 – 06:00 PM	Smart Contract Deployment & Testing

DAY 4: Cyber Security Tools & Network Analysis

Time	Activity
09:00 – 10:30 AM	Network Security Fundamentals and Threat Detection
10:30 – 10:45 AM	Tea Break
10:45 – 12:15 PM	Reconnaissance, Enumeration and Network Scanning Techniques
12:15 – 01:15 PM	Nmap: Network Discovery and Vulnerability Assessment
01:15 – 02:00 PM	Lunch Break
02:00 – 03:30 PM	Networking Fundamentals for Security Professionals, Wireshark: Packet Capture and Analysis,
03:30 – 04:30 PM	Traffic Monitoring and Incident Investigation
04:30 – 05:30 PM	Hands-on Exercises using Nmap and Wireshark
05:30 – 06:00 PM	Case Studies and Q&A Session

DAY 5: Intrusion Detection Systems (IDS), SOC & Assessment

Time	Activity
09:00 – 10:30 AM	Intrusion Detection Concepts and Security Monitoring
10:30 – 10:45 AM	Tea Break
10:45 – 12:15 PM	Signature-Based and Anomaly-Based Detection Systems
12:15 – 01:15 PM	Security Operations Center (SOC): Functions and Architecture
01:15 – 02:00 PM	Lunch Break
02:00 – 03:30 PM	Suricata IDS Configuration and Rule Management
03:30 – 04:30 PM	Hands-on: Alert Analysis and Rule Testing
04:30 – 05:15 PM	Intrusion Detection Demonstration and Incident Response
05:15 – 05:45 PM	Final Assessment / Quiz / Project Evaluation
05:45 – 06:30 PM	Valedictory Session, Feedback Collection, Certificate Distribution

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Total 40 Hours

DAY-1: Cyber Security Fundamentals, Kali Linux & Python Basics

Time	Activity
09:00 – 10:00 AM	Registration of Participants
10:00 – 11:00 AM	Inaugural Session, Welcome Address, Lamp Lighting & Keynote Address
11:00 – 11:15 AM	Tea Break
11:15 – 12:15 PM	Introduction to Cyber Security: Concepts, Scope & Career Opportunities
12:15 – 01:15 PM	Cyber Threat Landscape, Cyber Attacks & Security Principles
01:15 – 02:00 PM	Lunch Break
02:00 – 03:00 PM	Kali Linux Environment: Installation & Configuration
03:00 – 04:00 PM	Linux Command Line Fundamentals
04:00 – 04:15 PM	Tea Break
04:15 – 05:15 PM	Python Programming Basics for Security Applications
05:15 – 05:30 PM	Hands-on Exercise: Password Generator Mini Project & Q&A

DAY-2: Cryptography & Secure Communication

Time	Activity
09:00 – 10:00 AM	Fundamentals of Cryptography
10:00 – 11:00 AM	Symmetric Encryption Algorithms (AES, DES)
11:00 – 11:15 AM	Tea Break
11:15 – 12:15 PM	Asymmetric Cryptography (RSA, ECC)
12:15 – 01:15 PM	Hash Functions, Digital Signatures & Message Integrity
01:15 – 02:00 PM	Lunch Break
02:00 – 03:00 PM	Secure Communication Protocols (SSL/TLS, HTTPS)
03:00 – 04:00 PM	Hands-on Lab: Caesar Cipher & Encryption Techniques
04:00 – 04:15 PM	Tea Break
04:15 – 05:15 PM	Hands-on Lab: Hash Generation, Verification & Secure Messaging
05:15 – 05:30 PM	Crypto Challenge & Discussion

DAY-3: Blockchain Technology & Smart Contracts

Time	Activity
09:00 – 10:00 AM	Blockchain Fundamentals & Evolution
10:00 – 11:00 AM	Blocks, Hashes, Distributed Ledgers & Consensus Mechanisms
11:00 – 11:15 AM	Tea Break
11:15 – 12:15 PM	Blockchain Platforms & Decentralized Applications (DApps)
12:15 – 01:15 PM	Smart Contracts: Concepts and Applications
01:15 – 02:00 PM	Lunch Break
02:00 – 03:00 PM	Ethereum & Smart Contract Development using Remix IDE
03:00 – 04:00 PM	Hands-on Lab: Blockchain Simulation
04:00 – 04:15 PM	Tea Break
04:15 – 05:15 PM	Smart Contract Deployment, Testing & Security Considerations
05:15 – 05:30 PM	Discussion and Assignment

DAY-4: Cyber Security Tools & Network Analysis

Time	Activity
09:00 – 10:00 AM	Network Security Fundamentals
10:00 – 11:00 AM	Reconnaissance & Enumeration Techniques
11:00 – 11:15 AM	Tea Break
11:15 – 12:15 PM	Network Scanning using Nmap
12:15 – 01:15 PM	Packet Analysis & Traffic Monitoring
01:15 – 02:00 PM	Lunch Break
02:00 – 03:00 PM	Hands-on Lab: Network Discovery & Port Scanning
03:00 – 04:00 PM	Wireshark for Packet Capture and Analysis
04:00 – 04:15 PM	Tea Break
04:15 – 05:15 PM	Security Investigation Case Study & Incident Analysis
05:15 – 05:30 PM	Daily Assessment

DAY-5: Intrusion Detection Systems (IDS) & Security Monitoring

Time	Activity
09:00 – 10:00 AM	Introduction to Intrusion Detection Systems
10:00 – 11:00 AM	Signature-Based & Anomaly-Based Detection Techniques
11:00 – 11:15 AM	Tea Break
11:15 – 12:15 PM	Security Monitoring, Logging & Alert Management
12:15 – 01:15 PM	Security Operations Center (SOC): Concepts & Workflow

Time	Activity
01:15 – 02:00 PM	Lunch Break
02:00 – 03:00 PM	Suricata IDS Installation & Configuration
03:00 – 04:00 PM	Hands-on Lab: Rule Creation, Testing & Alert Analysis
04:00 – 04:15 PM	Tea Break
04:15 – 05:00 PM	Capstone Exercise: Intrusion Detection Demonstration
05:00 – 05:30 PM	Final Assessment, Feedback Collection & Valedictory Session

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Assessment Components

Component	Weightage
Daily Hands-on Exercises	30%
Mini Projects & Challenges	20%
Lab Performance	20%
Final Assessment	20%
Participation & Attendance	10%