



**VINOBA BHAVE
UNIVERSITY
HAZARIBAG**



**CYBERVIDYAPEETH
FOUNDATION
FARIDABAD**

POST GRADUATE DIPLOMA IN CYBER DEFENSE



THE INSTITUTION BEHIND THE MISSION



VINOBA BHAVE UNIVERSITY

Vinoba Bhave University was established in the year 1992 with its headquarters at Hazaribag, the divisional headquarter of North Chhotanagpur division of the state of JHARKHAND. It is situated at a distance of 100 K.M. from Ranchi, The capital of Jharkhand. Vinoba Bhave University is imparting post-graduate teaching and research in Physical Science, Life Science, Earth Science, Social Science, Humanities, Commerce, Technology and Medical Science.

Beside 22 colleges are managed and maintained by the university, including St. Columbas College, Hazaribag is one of the oldest and most well-established colleges in Eastern India Estd. 1899 . Seventy affiliated colleges are also imparting teaching up to the undergraduate level in all the above-mentioned subjects and in law, Education, Homeopathy and Ayurvedic Medicines. Every year, 900 B.Tech, 4000 graduate in the general courses, 550 graduates in professional and vocational courses, and 500 postgraduate including M.Tech. Degree is being awarded. Since its inception, more than 400 Ph.D. degrees have been awarded in all the above-mentioned subjects, including technology.



CYBER VIDYAPEETH FOUNDATION

Cybervidyapeeth Foundation or Cyberiversity is a start-up with a focus on Education, Research, and Training on Advanced Cyber Défense. We are a strong team of Cyber professionals & Researchers, Black Hat hackers, and top-class academia. With a band of academicians & researchers, we have more than 100+ Patents & more than 1000+ research papers individually and our leaders have created more than 150+Ph.D. students. It's an apt time to build Cyber Rakshak in millions for Cyber Resilient Bharat with Deeper Cyber Offensive & defensive Capabilities. Our Post Graduate Diploma in Cyber Défense Cyber Rakshak-Advance is all set to create cyber battle-ready cyber defenders.

MISSION CYBERVIDYAPEETH FOUNDATION

Creating Cyber Rakshak

Creating a Large Pool of Cyber Rakshak aligned to NIST NICE Framework for cyber resilience.

Research & Development

Mentor research work in Cyber Defense Engineering with active collaboration of Industry, Researcher & Academia. Create & Promote Made In India Technology in Cyber Defense Space.

Discussion & Discourse

Engage & Promote collaboration among Technology, Cyber Professional, industry Academia & Researchers through Webinars, Conferences, Symposium, Events.

Ramesh Bais



सत्यमेव जयते

GOVERNOR OF JHARKAND

**RAJ BHAVAN
RANCHI-834001
JHARKAND**

MESSAGE

I am glad to note that Vinoba Bhave University, Hazaribagh is launching an online Post Graduate Diploma in Cyber Defense Cyber Rakshak- Advance in partnership with Cybervidyapeeth Foundation. V.B.U. has taken an important step in building a pool of necessary Cyber Defense Talents to make Bharat" Cyber Resilient.

Cyber Defence is a real pressing need for India and the creation of a market-ready talent pool in cyber defense will add significant value to India's Cyber Resilience. This is the most critical moment to accelerate our work to improve battle-ready Cyber Rakshak in lakhs for improving the cybersecurity posture of our country and bolster our National Cyber resilience.

I hope that this Cyber Rakshak-Advance program creates many talents for resilient and Aatmanirbhar Bharat.

My best wishes to Vinoba Bhave University and Cybervidyapeeth Foundation for a grand success in driving a mission-critical program on Cyber Defense.

A handwritten signature in blue ink, appearing to be 'R. Bais'.

Ramesh Bais



HEMANT SOREN
CHIEF MINISTER

MESSAGE

I am delighted to know that Vinoba Bhave University, Hazaribagh VBU , and Cybervidyapeeth Foundation is launching "**Post-Graduate Diploma in Cyber Defense Cyber Rakshak-Advance** " using an online live session and blended with a SaaS-based cyber simulator.

Cyber Rakshak with deep cyber defense engineering capability and skill shall foster a vibrant and resilient digital economy in Jharkhand. Developing a superior cyber security workforce is the need of the hour and through Cyber Rakshak - Advance program Jharkhand shall attract global business conglomerates to set up a center of excellence in cyber defense. Cyber resource efforts in large numbers will help protect digital space from cyber aggression and shall foster an engine of economic growth and innovation in Jharkhand and the country as a whole.

I wish Vinoba Bhave University and Cybervidyapeeth Foundation great success and assure you of all logistical support for the successful completion of your mission.



Hemant Soren

Hemant Soren

Lt General (Dr) Rajesh Pant,
PVSM AVSM VSM (Retd)
National Cyber Security Coordinator &
Special Secretary to Government of India
Tel. : 011-23747965, 011-23451306
E-mail : ncsc@gov.in



Government of India
National Security Council Secretariat
2nd Floor, Sardar Patel Bhavan,
Sansad Marg, New Delhi - 110001

MESSAGE

At the outset, I must compliment Vinoba Bhave University & Cybervidyapeeth Foundation for their well-timed endeavor to launch "Post Graduate Diploma in Cyber Defence Cyber Rakshak-Advance. At a time, when Cyber Threat Actors are unleashing incessant cyber attacks and causing irreparable damage globally, it's an opportune time to create a cyber defense talent pool for Cyber Resilient Bharat.

2. Cyber issues are truly engineering challenges and it needs an engineered response for creating resilience. As such we surely need proficient cyber defense engineering resources for solving the conundrum. India needs about a million Cyber Rakshak and any addition to this talent pool is an absolute necessity.
3. The Course Syllabus and approach for Online Pedagogy by Cyber Vidyapeeth is well aligned to the Cyber Defense needs of today's complex cyber world. The syllabus is also in sync with the requirements of industry and critical infrastructure. The course will surely produce a talent pool with deep expertise in Cyber Operations.
4. I congratulate Vinoba Bhave University & Cybervidyapeeth Foundation for taking a tremendous real leap to create next-generation Cyber Rakshak. My best wishes to your visionary effort for creating a Cyber Resilient & Aatmanirbhar Bharat.

'Jai Hind'

Rajesh Pant

Dr. Sanjay Bahl
Director General



भारत सरकार
Government of India
इलेक्ट्रॉनिकी और सूचना प्रौद्योगिकी मंत्रालय
Ministry of Electronics & Information Technology
भारतीय कम्प्यूटर आपात प्रतिक्रिया दल (सर्ट-इन)
Indian Computer Emergency Response Team (CERT-IN)
इलेक्ट्रॉनिक्स निकेतन 6, सी जी ओ कॉम्प्लेक्स, नई दिल्ली-110003
Electronics Niketan, 6, C G O Complex, New Delhi-110003
Tel.: 24368544, Fax : 24366806, E-mail : sanjay.bahl@gov.in

MESSAGE

It is a pleasure to learn that Vinoba Bhave University VBU, Cyber Defense Cyber Rakshak - Advance " in partnership with Cybervidyapeeth Foundation. The three tenets of cyber security are process, technology and people. There is a need for people to develop robust cyber security processes, people are required to come up with innovative cyber security technology and people are the weakest link!

There is an immediate need to create a talented pool of cyber security specialists with a multi-disciplinary approach.

I am sure this is the first step by Vinoba Bhave University and Cybervidyapeeth Foundation in this direction for Aatmanirbhar Bharat.

My best wishes to Vinoba Bhave University and Cybervidyapeeth Foundation for continued success in driving a mission-critical program for cyber-resilient Bharat.

Dr. Sanjay Bahl

Director-General, CERT-In

13/07/2022

Dr. Mukul Narayan Deo
Vice-Chancellor



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VINOBA BHAVE UNIVERSITY

Hazaribag - 825301, Jharkand, India

MESSAGE

Cyber threats are affecting everyone across the globe and India is no exception. That's why marshaling whole-of-nation efforts to build Cyber Battle-Ready resources in large numbers to confront cyber threats effectively is the need of the hour. Nothing can be more opportune time than now to build a million Cyber Rakshak.

It is a matter of utmost pleasure that Vinoba Bhave University VBU in association with and Cybervidyapeeth Foundation is launching the need-of-the-hour course "Post Graduate Diploma in Cyber Defense Cyber Rakshak-Advance " when Cyber Offenders are posing humongous challenges.

The well-timed step that has been taken by VBU and Cybervidyapeeth Foundation in this direction is absolutely commendable.

The Cyber Rakshak-Advance program will surely produce the necessary talent pool with deep expertise in Cyber Offense and Defense capability. I am sure this Cyber Battle-Ready Talent pool will be an important asset for the country as a whole.

I congratulate Cybervidyapeeth Foundation for their unique endeavor to create next-generation Cyber Battle-Ready Cyber Rakshak. My best wishes for launching this first-of-its-kind program at VBU in Cyber Defence and incessant effort towards Cyber Resilient & Aatmanirbhar Bharat.

(Mukul Narayan Deo)
Vice-Chancellor

THE MESSAGE



VINOBA BHAVE UNIVERSITY, HAZARIBAG



Dr. ASHISH KUMAR SAHA

Director University College of Engineering (UCET) Vinoba Bhave University (VBU), Hazaribagh

UCET VBU is pioneering in Engineering education and brings world-class pedagogy & business-oriented Research & Development. We bring together a world-class Cyber Défense education Post Graduate Diploma in Cyber Défense for creating next-generation Cyber Rakshak for Bharat. Cyber Dominance in asymmetric war is sine-qua-non our success in the business domain.



CYBERVIDYAPEETH FOUNDATION, FARIDABAD



SHASHANK SHEKHAR GARURYAR

Chairman, Cybervidyapeeth Foundation

The role of cyber defense in a connected world is gigantic. Cyber Defence is a daunting task and needs significantly specialized engineering skills & knowledge. The challenges posed by complex Cyber-Attacks need an immediate course correction. Creating a pool of Cyber Defence Engineers and reskilling the existing resources are the burning topics of the day. Post Graduate Diploma in Cyber Defence Cyber Rakshak-Advance using an online Live Session blended with a SaaS-based Cyber Simulator is truly a great stride to bridge the acute gap of Cyber Engineering resources in India. Bharat is calling you to be a cyber battle-ready defender.

CYBER ENGINEERING RESOURCING CHALLENGES

As the world embraces a new serpentine and covert journey of asymmetric warfare, the connected digital world enters an age of uncertainty. A parallel world of complex cyber-attacks is growing at the speed of light and with no respite. Cyber security is a complex system Engineering Problem and needs an engineered solution. But lack of necessary research focus and a serious shortage of technical talent is creating havoc the world over and India is no exception.



There are around 3.1 million unfilled vacancies in the cyber security engineering space worldwide today. If India wants to bring true Cyber Resilience, we need to steer through a journey of talent creation in Cyber Engineering. Cyber defense Engineering talent in bulk is key to the Nation's safety. A good surplus in Cyber Rakshak talent pool can bridge the talent gap and support the world economy. In turn, we can garner USD 100 Billion in the next 10 years.

We need 1 million trained **Cyber Rakshak** right away. As per Michael Page, the world's largest human resource consulting firm, India needs **1.5 million Cyber Rakshak** by 2025 and the world needs around **7 million Rakshak** at the same time.

If we want to play a leadership role **Vishwa Guru** in Cyber Defense, we need to tap the fullest potential of young students to guide, mentor, and educate them in Cyber Defense in the quickest possible time.

Only India can achieve this feat as we produce 4 million Technology graduates and we have a talent pool to tap.



CYBER COMPETENCY CHALLENGES & WAY FORWARD

- 🌀 Cybercrime/Attack costs the global economy about 1 trillion.
- 🌀 Cyber Engineering Resource gap is causing havoc.
- 🌀 Cyber Competency needs re-definition and needs to add 27+ unique Skills & Knowledge paradigm.
- 🌀 World need 7 million Cyber Engineers by 2025.
- 🌀 New Education Policy clearly supports dual degree or certification in critical area like cyber defense.

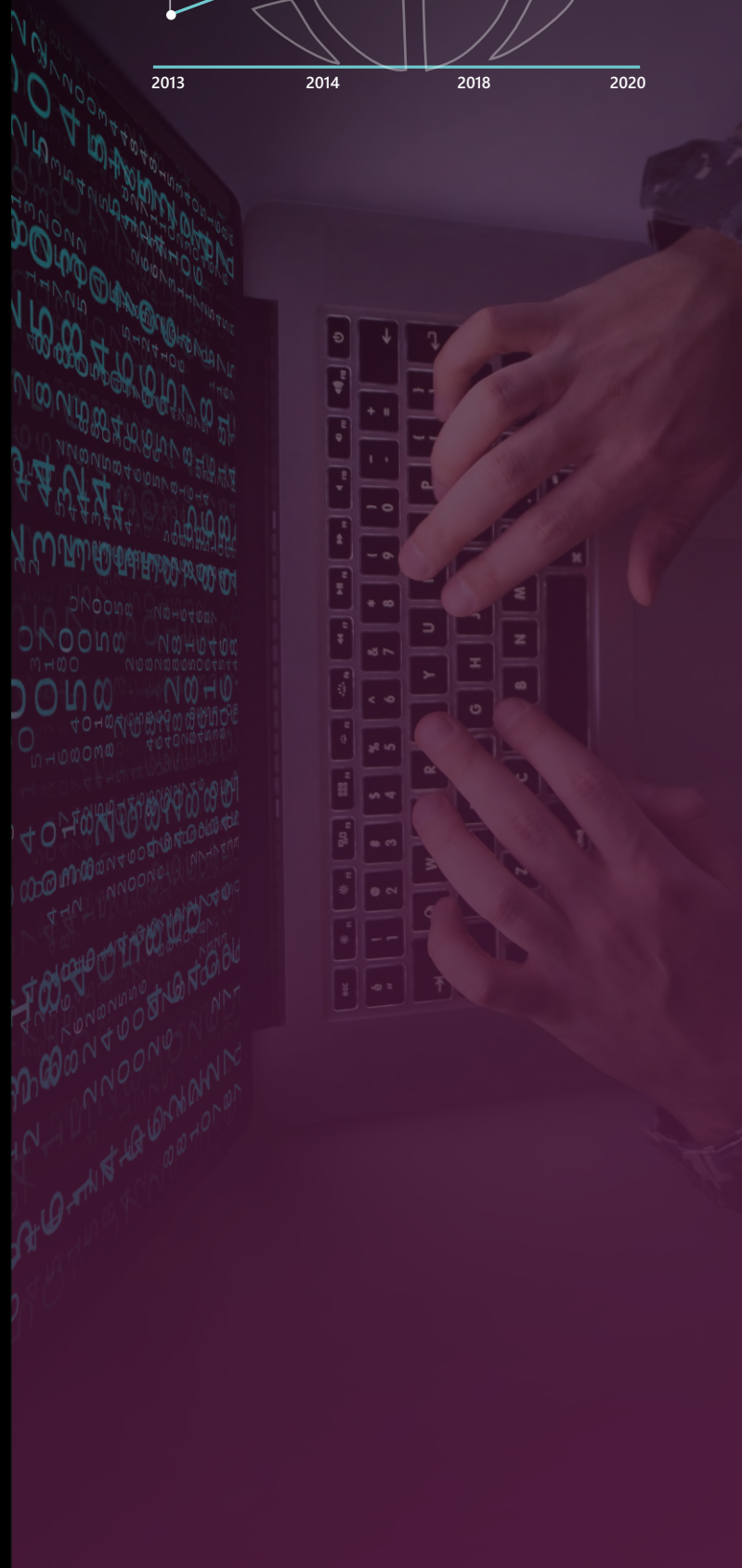
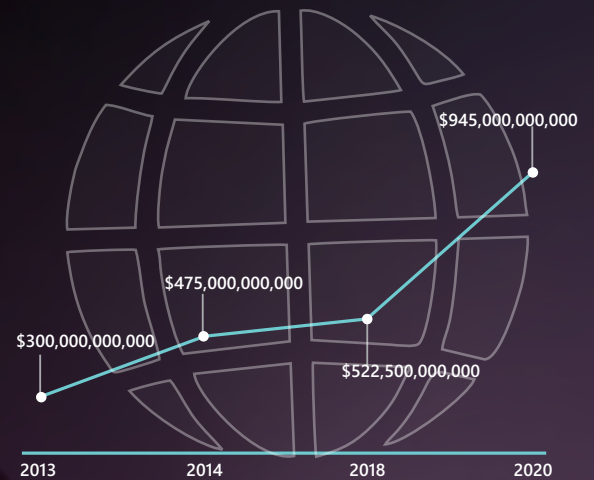
WHO SHOULD JOIN THIS EDUCATIONAL JOURNEY?

Post Graduate Diploma in Cyber Defense is meant for Under Graduate, Graduate or Post Graduate with good scripting skills in Python & shell programming. We provide practical oriented blended course in online classroom and Cyber Simulator based absolute hands on experience in advance cyber defense skills. Normally, we look for passionate learners who wish make great career in cyber offense - defense world. If you are passionate, we waive your minimum criteria!!!

PREREQUISITE

- 🌀 Online Skill test in Basic Python & Shell Scripting
- 🌀 Under Graduate, Graduate, Post Graduate
- 🌀 Know your Customer Verification
- 🌀 Background Check
- 🌀 Statement of Purpose
- 🌀 Psychometric Test

TOTAL COST OF CYBERCRIME



PEDAGOGY

ONLINE CLASSROOM SESSION

840 hours of Online Live Sessions



SIMULATOR BASED EXPERIENTIAL LEARNING

200 hours of Simulation & Scenario Based Learning

5E LEARNING MODEL

Continuous Evaluation Process



We have aligned our teaching process with 5E Model of Learning. The 5E Model, developed in 1987 by the Biological Sciences Curriculum Study (USA), promotes collaborative, active learning in which students work together to solve problems and investigate new concepts by asking questions, observing, analyzing, and drawing conclusions. Our Training methodology integrate intrinsically with the 5E learning Model for navigating students to build their own understanding from experiences and new ideas. We have advanced our training methodology with continuous evaluation & research - based pedagogy approach and embedded Problem-based Learning, Scenario-based Learning and Universal Design for Learning. The model gets further integrated with our Learning Management System and Data Science based evaluation system to improve learning cycle of every student in an inclusive way.



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**CYBERVIDYAPEETH
FOUNDATION
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Launching World's Unique "Post Graduate Diploma in Cyber Defense"



THE SYLLABUS

POST GRADUATE DIPLOMA IN CYBER DEFENSE



THE SYLLABUS



TAMING PYTHON SCRIPTING FOR VIRULENCE

DURATION : 100 HOURS

DANCING WITH DATA SCIENCE FOR ACTIVE CYBER RAKSHA

DURATION : 50 HOURS

DECODING NETWORK TECHNOLOGY & CYBER ATTACK

DURATION : 50 HOURS

CLIMBING THE CLOUD WITH SAFETY LADDER

DURATION : 100 HOURS

OFFENSIVE DEFENSE

DURATION : 150 HOURS

FLYING HIGH WITH CYBER SIMULATOR

DURATION : 200 HOURS

CREATING CHAKRAVYUH FOR INDUSTRIAL CONTROL SYSTEM

DURATION : 100 HOURS

THREAT INTELLIGENCE & OSINT

DURATION : 80 HOURS

CREATING CYBER MISSILES USING SYSTEM PROGRAMMING

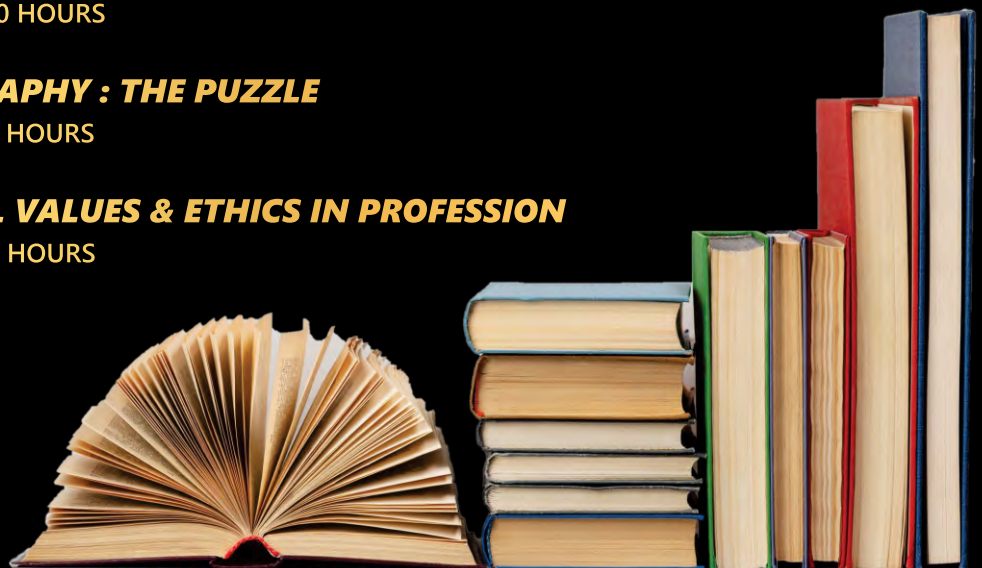
DURATION : 100 HOURS

CRYPTOGRAPHY : THE PUZZLE

DURATION : 70 HOURS

UNIVERSAL VALUES & ETHICS IN PROFESSION

DURATION : 40 HOURS



TAMING PYTHON SCRIPTING FOR VIRULENCE

DURATION : 100 HOURS

INTRODUCTION OF OFFENSIVE PYTHON

- Setting up a Development Environment for Python
- Introduction to the Python Programming Language
- An Explanation of Variables, Data types, Strings Lists, Dictionaries, Functions
- Work with Networking, Iteration, Selection, Exception Handling and Modules
- Write Your First Python Program, a Dictionary Password Cracker
- Write Your Second Python Program, a Zipfile Brute-Force Cracker

PENETRATION TESTING WITH PYTHON

- Building a Port Scanner
- Constructing an SSH Botnet
- Mass Compromise with FTP
- Replicate Malware
- Your Own Zero Day Attack

PENETRATION TESTING WITH PYTHON

- Geo-Location through the Windows Registry
- Recycle Bin Investigation
- Examining Metadata in PDFs and Microsoft Documents
- Extracting GPS Coordinates from Exif Metadata
- Investigating Skype Artifacts
- Enumerating Browser Artifacts from Firefox Databases
- Examining Mobile Device Artifacts

NETWORK TRAFFIC ANALYSIS WITH PYTHON

- Geo-Locate Internet Protocol (IP) Traffic
- Discover Malicious DDoS Toolkits
- Uncover Decoy Network Scans
- Analyze Storm's Fast-Flux and Domain Flux
- Understand the TCP Sequence Prediction Attack
- Foil Intrusion Detection Systems with Crafted Packet

WIRELESS ATTACK WITH PYTHON

- Sniffing Wireless Networks for Personal Information
- Listening for Preferred Networks and Identifying Hidden Wireless Networks
- Taking Control of Wireless Unmanned Aerial Vehicles
- Identifying Firesheep in Use
- Stalking Bluetooth Radios
- Exploiting Bluetooth Vulnerabilities

WEB RECON WITH PYTHON

- Anonymously Browsing the Internet with the Mechanize Class
- Mirroring Website Elements in Python Using BeautifulSoup
- Interacting with Google Using Python
- Interacting with Twitter Using Python
- Automated Spear-Phishing

ANTIVIRUS EVASION WITH PYTHON

- Working with Python Ctypes
- Anti-Virus Evasion using Python
- Building a Win32 Executable using Pyinstaller
- Utilizing HTTPLib to GET/POST HTTP Requests
- Interacting with an Online Virus Scanner

DANCING WITH DATA SCIENCE FOR ACTIVE CYBER RAKSHA

DURATION : 50 HOURS

PYTHON FOR DATA SCIENCE

- Installation of Python, Jupyter Notebook & Google Colab
- Data Type, List, Functions, Loops,
- NumPy - Math Operations & Array,
- Pandas - Dataframe,
- Reading CSV file & DB data

STATISTICAL ANALYSIS OF DATA

- Basic Statistics - Mean, Median & Mode,
- Variance, SD, Population vs. Sample,
- Central Tendency Theory,
- Charts & Graphs for Analysis,
- Distribution - Normal, Uniform & Poisson, p-value,
- Hypothesis Testing

MACHINE LEARNING - MAKE THE DATA DANCE

- Overview of ML - Training
- Confusion Matrix
- R-Square
- Supervised Vs. Unsupervised
- Regression
- Decision Tree & Random Forest
- K - Means Clustering

TIME SERIES ANALYSIS

- Theory of time bound data
- Sample time series data
- Plotting time series data
- Components - Trend
- Seasonality
- Business Cycle
- Time Series Forecast - SMA
- Exponential Smoothing, ARIMA

TEXT ANALYSIS

- Concept of Unstructured Data
- Use Cases
- Tokenization
- Bag of Words
- OSINT, WEBINT, Word Cloud, Concept of Topic Modelling

DECODING NETWORK TECHNOLOGY & CYBER ATTACK

DURATION : 50 HOURS

NETWORKING FOUNDATION

- History of Networking
- Electronics in LAN
- Tech Components in LAN
- Networking Devices
- Networking Topologies
- Type of Networks
- Cabling, Fiber & Wireless
- Throughput & Bandwidth

CORE NETWORKING CONCEPTS-I

- OSI Layers
- Data Encapsulation in OSI
- TCP IP Layers
- TCP IP Applications
- TCP IP Data Encapsulation
- TCP IP Addressing
- Ethernet Switching
- ARP & RARP
- Shared LAN & Congestion
- Layer 2 Switching

CORE NETWORKING CONCEPTS-II

- IP Introduction & Details
- ICMP
- Routing & Switching
- TCP Introduction & Details
- UDP Introduction & Details
- TCP Handshake
- Firewall
- Wireless Access Router
- Wireless Access Controller
- Intrusion Detection/Prevention System

CLIMBING THE CLOUD WITH SAFETY LADDER

DURATION : 100 HOURS

DATA CENTERS & CLOUD ARCHITECTURE

- NIST Framework on Cloud Infra & Definitions
- Security & Privacy in Cloud Computing
- Data Centre Infra Layers
- Compute Systems Types
- Virtualized Networks & Compute Systems
- Software Defined Data Centre
- NIST SP 800:144
- NIST SP 800:145
- NIST SP 800:146
- Cloud Security Alliance Security Guidelines
- Exploiting Cloud

AWS SECURITY

- Security on AWS
- Security of Cloud
- Security in Cloud
- AWS Security Tools
- AWS Architecture
- Entries Identification
- Web Applications
- Application Security
- Data Security, Secure Networking
- Logs Monitoring
- Threat Detection
- Automated Security
- AWS Well Architected Framework-Security Pillar
- Hardening of AWS system
- Containerization Security

OFFENSIVE DEFENSE

DURATION : 150 HOURS

INTRO TO SIEM

- Real-time visibility across the environment
- Fewer false positive alerts
- Reduced mean time to detect (MTTD) and mean time to response (MTTR)
- Collection and normalization of data
- Ease of accessing and searching across raw and parsed data
- Mapping with existing frameworks such as MITRE ATT&CK
- Ensure compliance adherence with real-time visibility
- Customized dashboards and effective reporting

OSINT ANALYSIS

- Locating Public Exploits
- A Word of Caution
- Searching for Exploits
- Online Exploit Resources
- Offline Exploit Resources

VULNERABILITY SCANNING ANALYSIS

- Vulnerability Scanning
- Vulnerability Scanning Overview and Considerations
- How Vulnerability Scanners Work
- Manual vs Automated Scanning
- Internet Scanning vs Internal Scanning
- Authenticated vs Unauthenticated Scanning
- Installing Nessus
- Defining Targets
- Configuring Scan Definitions

VULNERABILITY SCANNING ANALYSIS-I

- Unauthenticated Scanning
- Authenticated Scanning
- Vulnerability Scanning with Nmap
- Web Application Attacks
- Web Application Assessment Methodology
- Web Application Enumeration
- Inspecting URLs
- Inspecting Page Content
- Viewing Response Headers

VULNERABILITY SCANNING ANALYSIS-II

- Locating Administration Consoles
- Web Application Assessment Tools
- DIRB
- Burp Suite
- Nikto

WEB APP VULNERABILITY ANALYSIS

- Exploiting Web-based Vulnerabilities
- Exploiting Admin Consoles
- Cross-Site Scripting (XSS)
- Directory Traversal Vulnerabilities
- File Inclusion Vulnerabilities
- SQL Injection

PHISHING VULNERABILITY ANALYSIS

- Client - Side Attacks
- Know Your Target
- Passive Client Information Gathering
- Active Client Information Gathering
- Leveraging HTML Applications

BINARY VULNERABILITY ANALYSIS-I

- Introduction to Buffer Overflows
- Introduction to the x Architecture
- Program Memory
- CPU Registers
- Buffer Overflow Walkthrough
- Sample Vulnerable Code
- Introducing the Immunity Debugger
- Overflowing the Buffer

BINARY VULNERABILITY ANALYSIS-II

- Windows Buffer Overflows
- Discovering the Vulnerability
- Fuzzing the HTTP Protocol
- Win Buffer Overflow Exploitation
- A Word About DEP, ASLR, and CFG
- Replicating the Crash
- Controlling EIP
- Locating Space for Our Shellcode

BINARY VULNERABILITY ANALYSIS-III

- Checking for Bad Characters
- Redirecting the Execution Flow
- Finding a Return Address
- Generating Shellcode with Metasploit
- Getting a Shell
- Improving the Exploit

NETWORK ARCHITECTURE

- Local Area Networks
- Wide Area Networks
- Personal Area Network
- Campus Area Network
- Metropolitan Area Network
- Storage Area Network
- Peer-to-Peer
- Tiered
- Thin-Client Network

3 TIER WEB APPLICATION ARCHITECTURE - PREREQUISITE

- Modularity
- Scalability
- High Availability
- Fault Tolerant
- Security

OFFENSIVE PYTHON - NETWORK SECURITY WITH PYTHON

- Introduction to netcat (nc & ncat)
- Introduction to python sockets
- Write customized port scanner in python
- Perform banner grabbing on open ports using netcat
- Write python script to bypass traffic using SOCKS

OFFENSIVE PYTHON - WEB APPLICATION SECURITY WITH PYTHON

- Handling URLs using python - Part1 (Introduction to URL handling)
- Handling URLs using python - Part2 (Write a script to test php authentication)
- Write python script to control a web shell
- Write python script to perform dictionary attack on web servers

OFFENSIVE PYTHON - ENDPOINT SECURITY WITH PYTHON

- Introduction to python shells
- Write python reverse shell (Linux platform)
- Write python reverse shell (Windows platform)
- Write python bind shell
- Using pyinstaller to create win32 executable file
- Using pyinstaller to create ELF executable file (Linux)
- Using py2exe to create win32 executable file

OFFENSIVE PYTHON - ENCRYPTION BASICS WITH PYTHON

- Write python script to generate rainbow tables - Part 1 (Dealing with hashes)
- Write python script to generate rainbow tables - Part 2 (write the script)
- Write python script to generate rainbow tables - Part 3 (save the results)
- Write python script to calculate checksum
- Write secure python reverse shell with ssl

OFFENSIVE PYTHON - BUFFER OVERFLOW BASICS WITH PYTHON

Introduction To Buffer Overflow
Introduction To Immunity Debugger
Introduction To Fuzzing
Write Python File Fuzzer

EMPIRE POWERSHELL-I

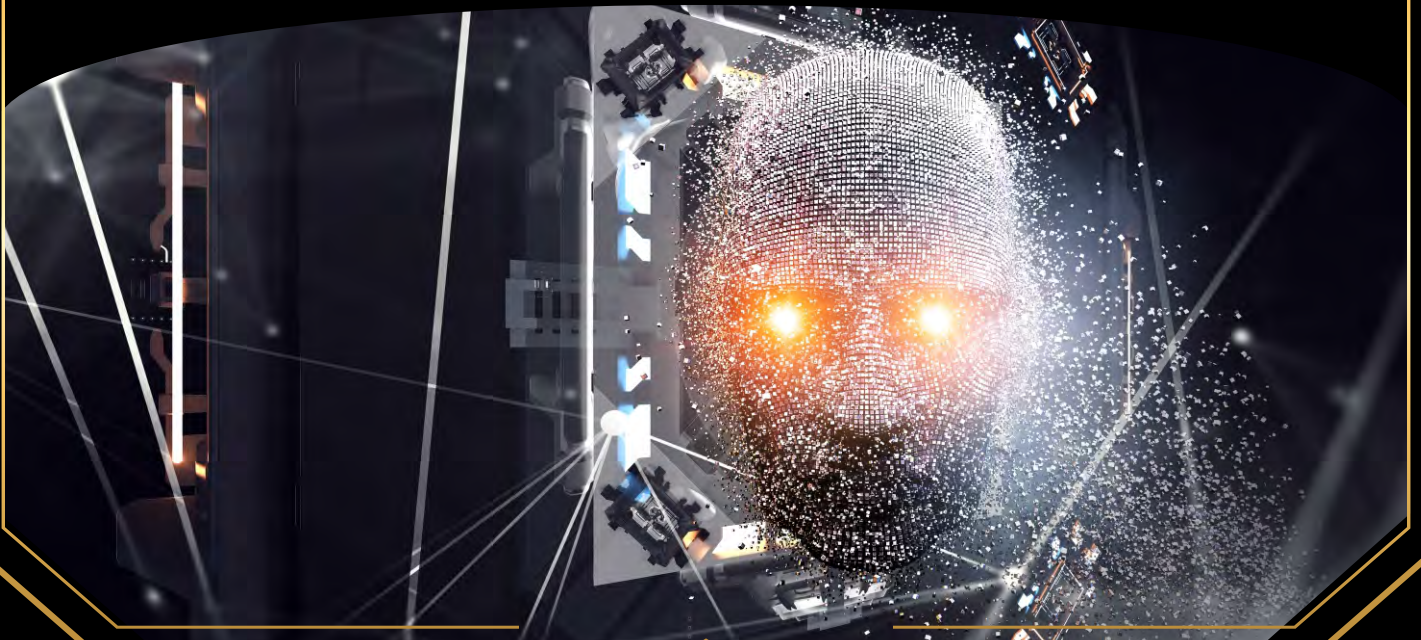
- Decoding PowerShell
- PowerShell Basic Commands
- Exploitation Of PowerShell
- Installing Empire PowerShell
- Listener
- Stager
- Agent

EMPIRE POWERSHELL-II

- Windows Exploitation And Post-exploitation With Empire
- Basic Options
- Collection Modules
- Credentials Modules
- Management Modules
- Privesc Modules
- Situational_awareness Modules
- Persistence Modules
- Macos Exploitation And Post-exploitation
- Linux Exploitation And Post-exploitation

FLYING HIGH WITH CYBER SIMULATOR

DURATION : 200 HOURS



CREATING CHAKRAVYUH FOR INDUSTRIAL CONTROL SYSTEM

DURATION : 100 HOURS

- Introduction to SCADA / ICS System
- Introduction to Industry 4.0
- SCADA Security: Social implications and impacts
- Governance and management
- Disaster recovery and SCADA
- Incident response and SCADA
- Forensics management
- Governance and compliance
- Architecture and modeling
- Communications and engineering systems

- Metrics framework for a SCADA system
- Networking topology and implementation
- Active defense in industrial control system networks
- SCADA & Open-source intelligence (OSINT)
- SCADA Patching and change management
- NESCOR VA/PT
- NIST 800:82
- Simulator based offensive Exercises

THREAT INTELLIGENCE & OSINT

DURATION : 80 HOURS

- Understanding Threat Intelligence
- Intelligence Definitions
- Traditional Intelligence Cycle
- Decoding Analytical Techniques
- Cyber Threat Intelligence
- Need of Organizations and Analysts
- Diamond Model
- MITRE ATT&CK
- Kill Chain
- OSINT Approach and Practical
- OSINT Preparation
- Computer Optimization
- Linux Virtual Machines

- Web Browsers
- VM Maintenance & Preservation
- Mac & Windows Hosts
- Android Emulation
- Custom Search Tools
- OSINT Resources & Techniques
- Search Engines
- Social Networks: Facebook
- Practical Session for OSINT

- Social Networks: Twitter
- Social Networks: Instagram
- Social Networks: General
- Online Communities
- Email Addresses
- Usernames
- People Search Engines
- Telephone Numbers
- Online Maps
- Documents
- Images
- Videos
- Domain Names

- IP Addresses
- Government & Business Records
- Virtual Currencies
- Advanced Linux Tools
- Data Breaches & Leaks
- OSINT Methodology
- Methodology & Workflow
- Documentation & Reporting
- Policy, Ethics, & Development

CREATING CYBER MISSILES USING SYSTEM PROGRAMMING

DURATION : 100 HOURS

ASSEMBLY PROGRAMMING-I

- Before You Start x64 Assembly Programming
- Your First Program
- Binary Numbers, Hexadecimal Numbers, and Registers
- Program Analysis with a Debugger: GDB
- Assembly is based on Logic
- Data Display Debugger
- Jumping & Looping
- Integer Arithmetic
- The Stack

ASSEMBLY PROGRAMMING-II

- Floating Point Arithmetic
- Functions
- Stack Alignment & Stack Frame
- External Functions
- Calling Convention
- Bit Operations
- Bit Manipulations
- Macros
- Console I/O
- File I/O
- Command Line

ASSEMBLY PROGRAMMING-III

- From C to Assembler
- Using cpuid
- SIMD
- Manipulating the mxcsr Bits
- SSE Alignment
- SSE Packed Integers
- SSE String Manipulation
- Search for a Character
- Do the Shuffle!
- SSE Strings Masks
- AVX

ASSEMBLY PROGRAMMING-IV

- AVX Matrix Operations
- Matrix Transpose
- Performance Optimization
- Hello, Windows World
- Using the Windows API
- Functions in Windows
- Variadic Functions
- Windows Files Project

RUST PROGRAMMING-I

- Introduction to Rust
- Rust Programming
- Multi-threaded Attack Surface Discovery
- Going full Speed with Async
- Adding Modules with Trait Objects
- Crawling the Web for OSINT
- Finding Vulnerabilities
- Exploit Development
- Writing Shellcodes in Rust
- Phishing with Web Assembly
- A Modern RAT

RUST PROGRAMMING-II

- Securing Communications with end to end Encryption
- Going Multiplatform
- Turning our RAT into Worm to Increase Outreach
- Conclusions

CRYPTOGRAPHY : THE PUZZLE

DURATION : 70 HOURS

OVERVIEW OF CRYPTOGRAPHY.

WHAT IS A CIPHER?

- Basic symmetric-key encryption
- One time pad
- Stream ciphers
- Perfect secrecy and the one time pad;
- Semantic security and stream ciphers.

BLOCK CIPHERS

- Iterated Even-Mansour ciphers
- Feistel networks
- Case studies: AES and 3DES.

HOW TO USE BLOCK CIPHERS

- Pseudo Random Permutations (PRP);
- Pseudo Random Functions (PRF);
- Security against chosen plaintext attacks (CPA);
- Ciphertext Block Chaining (CBC) Mode
- Output feedback (OFB) Mode
- Cipher Feedback (CFB) Mode
- Counter Mode

MESSAGE INTEGRITY: DEFINITION AND APPLICATIONS

- CBC-MAC & PMAC.
- Collision resistant hashing
- Merkle-Damgård and Davies-Meyer;
- MACs from collision resistance;
- Case studies: SHA and HMAC.

HASH FUNCTION

- Definitions and Security Requirements
- Applications of Hash Functions
- Merkle-Damgård Construction
- SHA-1
- SHA-2
- SHA-3

ELLIPTIC CURVE CRYPTOGRAPHY

- Weierstrass Equations and Elliptic Curves
- Elliptic Curve Diffie-Hellman
- Efficiency and Security of Elliptic Curve Cryptography
- Elliptic Curve Factoring Method

CRYPTOGRAPHY USING FINITE CYCLIC GROUPS

anonymous key exchange (Diffie-Hellman); the CDH and discrete-log assumptions

ELGAMAL PUBLIC KEY ENCRYPTION

semantically secure ElGamal encryption; CCA security

PUBLIC KEY ENCRYPTION USING A TRAPDOOR FUNCTION [PDF]

The RSA trapdoor permutation and its applications Summary of relevant facts

DIGITAL SIGNATURES

Digital signatures: definitions and applications How to sign using RSA.

MORE SIGNATURE SCHEMES AND APPLICATIONS [PDF]

Hash based signatures; Certificates, certificate transparency, certificate revocation.

IDENTIFICATION PROTOCOLS

Password protocols, salts; one time passwords (S/Key and SecurID); challenge response authentication.

AUTHENTICATED KEY EXCHANGE AND SSL/TLS SESSION SETUP [PDF]

ZERO KNOWLEDGE PROTOCOLS CRYPTOGRAPHY IN THE AGE OF QUANTUM COMPUTERS

- Quantum Bits
- Multiple Qubit Systems
- Quantum Algorithms
- Quantum Fourier Transform
- Shor's Factoring Algorithm
- Quantum Key Distribution
- Summary

UNIVERSAL VALUES & ETHICS IN PROFESSION

DURATION : 40 HOURS

VALUES & ETHIC - I

Science, Technology and Engineering as knowledge and as Social and Professional Activities Effects of Technological Growth:

- Rapid Technological growth and depletion of resources, Limits of growth: sustainable development
- Energy Crisis: Renewable Energy Resources
- Environmental degradation and pollution. Eco-friendly Technologies. Environmental Regulations, Environmental Ethics

VALUES & ETHIC - II

- Human Operator in Engineering projects and industries. Problems of man, machine, interaction, Impact of assembly line and automation. Human centered Technology.

Ethics of Profession:

- Engineering profession: Ethical issues in Engineering practice
- Conflicts between business demands and professional ideals.

VALUES & ETHIC - III

- Social and ethical responsibilities of Technologists.
- Codes of professional ethics.
- Whistle blowing and beyond, Case studies.

Profession and Human Values:

- Values Crisis in contemporary society
- Nature of values: Value Spectrum of a good life
- Psychological values: Integrated personality; mental health

VALUES & ETHIC - IV

- Societal values: The modern search for a good society,
- Justice, democracy, secularism, rule of law, values in Indian Constitution.
- Aesthetic values: Perception and enjoyment of beauty, simplicity, clarity
- Moral and ethical values: Nature of moral judgements;
- canons of ethics; ethics of virtue;
- Ethics of duty; ethics of responsibility.



**CYBERVIDYAPEETH
FOUNDATION**

Cybervidyapeeth Foundation In Nutshell

Trained 5000+
Cyber Defender

Re-imaged 5000+
Cyber Professional

Re-imaged 1000+
Scientists of
Indian Govt. Entity

Advisory Board
Member Mentored
more than
200 Ph.D.

10+ Hackers with
Deep Expertise in
System Engineering
Research

One Commercial
Product on Threat
Intelligence
Engineering

Partnerd with 500+
Organisation

Team has more
than 40 Patents

OUR GUIDE & MENTOR



Prof. RAMJEE PRASAD

Chairperson, Cybervidyapeeth Foundation

President, CTIF Global Capsule, Professor, Department of Business Development and Technology, Aarhus University, Herning, Denmark Prof. Ramjee Prasad has been awarded with "Knight of the Dannebrog" in 2010 from the Danish Queen for the internationalization of top-class Telecommunication Research. He has authored 30 books, 1000 plus journal and conference publications, more than 15 patents, and over 140 Ph.D. Graduates.



Dr. E.G. RAJAN

Co-Chairperson Cybervidyapeeth Foundation

Rashtriya Gaurav & Netaji Subhas Gaurav Samman Awardee Dr. Rajan was distinguished Professor at IIT, Kanpur He has mentored more 85 Ph.D & India's most sought after scientist in Electronics warfare. World acclaimed researcher in Image Processing & Predictive Modelling. One of his works is globally acclaimed as "Rajan Transform"



VICE ADMIRAL(Retd) RAMAN PURI

Advisor - Defense & National Security

Vice Admiral Retd. Raman Puri, PVSM, AVSM, VSM, A par excellence Indian Navy Officer who Retired as the Chief of Integrated Service Command CISC, the highest position in Défense. He is associated with many Defence Committees of Central Government and is also a Distinguished Fellow at Vivekanand International Foundation VIF



Dr. ASIT MOHAPATRA

President - Pedagogy

Dr. Mohapatra has been passionate about Management education and has taught at IIM Lucknow, Udaipur, Rohtak, Shillong, Ranchi, and Kozhikode. He has served as Secretary to the Board of Governors at IIM Ranchi and the Academic advisory board of three Management Institutes in India.

OUR GUIDE & MENTOR



Dr.B.J.SRINATH

Advisor - Cyber Defense Research

Dr. Srinath has been India's one of the finest Cyber Defense Researchers and in his last assignment worked as Director General, CERT-IN, He has been engaged and spearheaded the conceptualization and development of a National Cyber Security Strategy, National Cyber Security policy as well as the implementation of a National Cyber Security Assurance Framework.



ANIL K. JHA

Advisor - Energy Sector

Shri Jha had his last stint CMD and Director Technical of NTPC. He was conferred with CBIP Award for outstanding contribution in thermal Power sector development in 2016. He had been nominated as Member of Government of India delegation on climate change summit CoP 21 at Paris and CoP 22 at Marrakisch and also a member of the Expert Committee on tariff for Nuclear Power under the chairmanship of Mr M R Srinivasan.



VINOD BEHARI

Advisor - Skill Development

He had been CEO at Power Sector Skill Council a body promoted by the Government of India an alumnus of XLRI Jamshedpur and St Xavier's . College Ranchi has been a senior HR professional and held top management roles and HR leadership positions for over four decades. Currently, he is associated with USAID as Advisor in their Clean Energy Initiatives.



SANDIP KUMAR GHOSH

Advisor - Oil & Gas Sector

Shri Sandip has done his last assignment as Executive Director Ops , IOCL. He is a Whole Time Director and COO Matix Fertilisers Chemicals at . Durgapur. Conferred with several Industry Accolades and Distinctions and awards such as Best Innovator Award of Oil Industries from Petroleum Federation of India in 2008.



BAL KRISHNA BARANWAL

President - Domestic Relations

A technologist with over 35 years of IT experience at India's largest IT services company Tata Consultancy Services, played various roles including Delivery Head India - Business Operations, Resident Manager for business in Japan, Global Delivery Manager

OUR FACULTY



POST GRADUATE DIPLOMA IN CYBER DEFENSE

CYBER RAKSHAK
ADVANCE



BALAJI VENKETESHWAR

Chief Mentor - Cyber Defense

Cybervidyapeeth Foundation

A technologist with over 35 years of IT experience at India's largest IT services company Tata Consultancy Services, played various roles including Delivery Head India - Business Operations, Resident Manager for business in Japan, Global Delivery Manager.

Balaji has also worked for State Bank of India, India's largest Bank, Wipro as Head (Risk Management & Compliance), Bank of America as Senior Vice President (Global Information Security) for Global Delivery Center & CISO (India), PwC as Executive Director- Cyber Defense, Qualcomm as Director- Cyber Defense, IDFC First Bank as CISO. Currently, Balaji is working as Chief Mentor, Cybervidyapeeth Foundation- an Educational Entity dedicated to Advance Cyber Defense Training & Education.

In order to contribute to Cyber Security Ecosystem, Resilience planning and Policy Formulation at Country level, Balaji represents following Committees:

- Member Advisory Board for Global Cyberlympics. 2014-2020
- Member of the CII National Committee on Telecom & Broadband 2017-18
- Co-Chair of CII National Sub-Committee on Cyber Security-2016-17

Dr. BHUWAN MOHAN

Chief Knowledge Officer

Dr. Bhuwan Mohan is an academian par excellence with 40 of experience & exposure in Field of engineering, technology, Management, astrology and education. He has done his Masters in Structural Engineering from Sambalpur University. He has been a pioneer in implementing Computerization & E-Governance in Government of Bihar in early 90s. He has done his PhD in Human Resource Management and recently completed his next PhD in Astrology. Currently he is an Academic Counsellor, IGNOU , Ranchi. He has been Professor & Head of Department with CIT, Ranchi.

A born linguist with Buency in more than 10 language including Arabic. He has dedicated his life popularizing Computer Education in masses since 1990. For his academic pursuit and signiPcant work in popularizing Indian Knowledge System including astrology, he has been awarded "Jharkhand Ratna" & "Patrakarita Rashtriya Samman".



ARYA VEDABRATA

Data Scientist & Innovation Steward

With 17+ Years Exp. Success Stories of Data Innovation crafted in multiple industries – Banking, Pharma, Insurance, Airport, Airlines, Telecom, Logistics and MicroPnance. Filed 9 patents in USPTO with 2 granted. Expertise include Data Analytics, Data Science, Visualization Analytics, Analytical Product Development, Team Management, Data Quality Analytics, Datawarehouse, Business Intelligence, Banking Analytics, Audit Analytics, Fraud Analytics – Financial Crime (Anti-Bribery, Internal Fraud, Insider Trading) Has been training Data Science to Students as well as Corporates

Expertise include Data Analytics, Data Science, Visualization Analytics, Analytical Product Development, Team Management, Data Quality Analytics, Datawarehouse, Business Intelligence, Banking Analytics, Audit Analytics, Fraud Analytics – Financial Crime (Anti-Bribery, Internal Fraud, Insider Trading) Has been training Data Science to Students as well as Corporates



GEETA SINHA

Assistant Professor - Senior Scale

UCET- Vinoba Bhave University

Geeta Sinha is an Assistant Professor Sr in Computer Science. She has done her M.Tech. in Computer Science and Engineering from Birla Institute of Technology, Mesra, Ranchi. She is pursuing her PhD from IIIT Ranchi. Geeta has expertise in Artificial Intelligence and Machine Learning and she has honed her skill in Data Analytics, Artificial Intelligence, Machine Learning Management Information System, Database Management System, Data Mining, Data Science, Universal Values & Ethics.

ARUN KUMAR MISHRA

Asst. Prof. in Computer Science & Engineering

UCET- Vinoba Bhave University

Prof. Arun Kumar Mishra is an Assistant Professor in Computer Science. He has done his B.TECH. in Computer Science and Engineering from Dehradun Institute of Technology, Dehradun. He has done his MTECH from IIT, Varanasi. Prof. Arun has expertise in Data Science and he has honed his skill in Management Information System, Machine Learning, Formal Language and Automata Theory, Database Management System, Data Mining, Data Science.

Prof. Arun has been awarded BHU MEDAL in the year 2008, from Honourable Prime Minister of India Dr. Manmohan Singh for securing First position in M. Tech.



Dr. SANTOSH KUMAR SRIVASTAVA

Assistant Professor, M.Phil, M.C.A. & P.G. - Mathematics

MCE- Vinoba Bhave University

Research Paper Published / Communicated in referred journals

- Security Framework Against Malicious Attacks in Wireless Sensor Network, IJATER, ISSN No: 2250-3536. Volume 3, Issue 5, Sept. 2013
- A quarantine model on the spreading behavior of worms in wireless sensor network, ICAS, Transaction on IoT and Cloud Computing 2(1) 1-13 2014
- Two Time Delay Quarantine Model for the Transmission of Worms in Wireless Network, ISSN: 1738 - 9976 IJSIA, <http://dx.doi.org/10.14257/ijisia.2017.10.10.02>
- mathematical model on cyber attack behavior in e-commerce , to understanding cyber threats and attacks, isbn 978-1-53618-336-8, 2020, chapter 9 Area



**CYBERVIDYAPEETH
FOUNDATION**

Our Assurance

3
Assured
Interviews

Assured Job
for
Top 2%

55+
Academic Bank
of Credit
for
Masters
Education

Off-business
Hours Learning

20 Hours Live
Classroom
Every Week

Holidays Session
16 Hours (Sat/Sun)

4 Hours In Night 9-10
Every Week Days

200 Hours of
Intense Simulator
Based Learning

Continuous
Assessment
For Easy Learning
Path

WHO CAN APPLY

- Bachelor Final Year Students
- Graduate any Stream
- Industry Participants
- Post-Graduate Students
- Research Scholars
- PG Scholars
- The faculty members from any Technical Institutions
- Students from Engineering Institutions
- BCA/MCA. BSc-IT. B.Sc-Math, B.Sc-Statistics
- Government Officers
- Police Training Institute
- Defence/Security Forces Training Entity
- Sectoral Training Entity
- Staff of host institutions

REGISTRATION FEES

Course Fee: ₹80,000.00+18% GST Per Person Rupees Eighty Thousand + 18% GST

HOW TO APPLY

1. Register Online by Visiting <https://cybervidyapeeth.in/courses/CyberRakshak-Advance>
2. Make Payment as referred In the Registration Fees Section Above

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