



AICTE APPROVED

SIRINTEL TECHNOLOGIES PRIVATE LIMITED

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All India Council for Technical Education



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PYTHON CYBERSECURITY

Python Cybersecurity Course Syllabus

Week 1: Introduction to Python for Cybersecurity

- Overview of Cybersecurity and Python's Role.
- Basic Python Syntax: Variables, Data Types, and Data Structures.
- Control Structures: For Loops and While Loops.
- File Handling for Cybersecurity Applications.

Week 2: Python Data Structures and Algorithms

- Advanced Data Structures: Lists, Tuples, Dictionaries, and Sets.
- Implementing Algorithms for Security Tasks.
- Practical Exercises on Data Manipulation and Processing.

Week 3: Introduction to Machine Learning for Cybersecurity

- Basics of Machine Learning and its Application in Cybersecurity.
- Implementing Basic Machine Learning Models: Linear, Multiple, and Polynomial Regression.
- Hands-On: Applying ML for Security Data Analysis.

Week 4: Classification Algorithms in Cybersecurity

- Implementing Logistic Regression, KNN, Decision Trees.
- Understanding Model Evaluation Metrics: Accuracy, Precision, Recall.
- Practical Example: Classification of Malware and Threats.

Week 5: Advanced Machine Learning Techniques

- Implementing Boosted Decision Trees and Random Forest.
- Feature Importance and Model Optimization.
- Hands-On: Enhancing Security Model Accuracy.

Week 6: Introduction to Clustering Techniques

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- Understanding Clustering: K-Means, Hierarchical, DBSCAN.
- Implementing Clustering Techniques for Anomaly Detection.
- Practical Example: Clustering Network Traffic Data.

Week 7: Real-Time Ethical Hacking and Security

- Overview of Ethical Hacking: Concepts and Tools.
- Real-Time Attacks: Website Hacking, Mobile, Laptop, WiFi.
- Hands-On: Setting Up a Penetration Testing Environment.

Week 8: Coding for Cryptography

- Basics of Cryptography: Concepts and Techniques.
- Implementing Encryption and Decryption in Python.
- Hands-On: Creating a Secure Communication Channel.

Week 9: Python for Keyloggers and Brute Force Attacks

- Understanding Keyloggers: Implementation and Detection.
- Writing a Basic Brute Force Attack Script in Python.
- Ethical Considerations and Mitigation Strategies.

Week 10: Secure Password Generation and Management

- Techniques for Secure Password Generation.
- Implementing Password Strength Validators.
- Hands-On: Creating a Password Management System.

Week 11: Detecting Scams and Phishing

- Overview of Email, SMS, and Ads Scam Detection.
- Writing Python Scripts for Phishing Website Detection.
- Hands-On: Building a Phishing Detection Tool.

Week 12: Steganography in Python



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- Introduction to Steganography: Concepts and Applications.
- Implementing Audio, Video, and Image Steganography in Python.
- Hands-On: Hiding Information in Multimedia Files.

Week 13: Advanced Security Practices

- Secure Coding Practices and Techniques.
- Implementing Security Measures for Web and Network Applications.
- Hands-On: Securing a Python-Based Web Application.

Week 14: Real-Time Security Challenges

- Analyzing Real-Time Security Threats and Attacks.
- Simulating and Mitigating Live Security Breaches.
- Hands-On: Incident Response and Forensics.

Week 15: Final Project and Evaluation

- Selecting and Developing a Real-World Cybersecurity Project.
- Implementing and Testing Security Solutions.
- Final Presentation: Project Demonstration and Review.

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