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| <p style="text-align: center;"><b>UNIT III</b></p> <p>Rijndael in Composite Field, Elliptic Curves, Scalar Multiplications: LSB First and MSB First Approaches, Montgomery’s Algorithm for Scalar Multiplication.</p>                                                                                                                                                                                                                                                                                                                                                                             |
| <p style="text-align: right;"><b>( 12 Hours )</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p>Textbooks :</p> <ol style="list-style-type: none"> <li>1. “Hardware Security Design, Threats, and Safeguards”, Debdeep Mukhopadhyay Rajat Subhra Chakraborty, CRC Press, 2015</li> <li>2. “Hardware IP Security and Trust”, Prabhat Mishra, Swarup Bhunia, Mark Tehranipoor, Springer, 2017</li> <li>3. “Fault Tolerant Architectures for Cryptography and Hardware Security”, Sikhar Patranabis Debdeep Mukhopadhyay, Springer, 2018</li> <li>4. “Security of Block Ciphers - From Algorithm Design to Hardware Implementation”, Kazuo Sakiyama, Yu Sasaki, Yang Li, Wiley, 2015</li> </ol>   |
| <p style="text-align: center;"><b>CSCS 405 : PROBLEM SOLVING USING PYTHON</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>Course Objectives :</p> <ol style="list-style-type: none"> <li>1. To empower the student with the most versatile computer language available for wide variety of tasks in cybersecurity</li> <li>2. To make the student aware of the different language components which serve different purposes in programming</li> </ol>                                                                                                                                                                                                                                                                    |
| <p>Course Outcomes :</p> <ol style="list-style-type: none"> <li>1. Student gets the knowledge about the right choice of data structures for a task</li> <li>2. Student gets the feel for applying a programming language for different scenarios in cybersecurity.</li> </ol>                                                                                                                                                                                                                                                                                                                     |
| <p style="text-align: center;"><b>UNIT I</b></p> <p>A Gentle Introduction to Python: A proper introduction, Enter the Python, About Python, What are the drawbacks, Who is using Python today?, Setting up the environment, Installing Python, How you can run a Python program, How is Python code organised? Python's execution model, Guidelines on how to write good code, Built-in Data Types: Mutable or immutable? That is the question Numbers, Immutable sequences, Mutable sequences, Set types, Mapping types – dictionaries, The collections module, Enums, Final considerations.</p> |
| <p style="text-align: right;"><b>( 12 Hours )</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p style="text-align: center;"><b>UNIT II</b></p> <p>Iterating and Making Decisions Conditional programming: Looping, Putting all this together, A quick peek at the itertools module, Functions, the Building Blocks of Code: Why use functions?, Scopes and name resolution, Input parameters, Return values, A few useful tips, Recursive functions, Anonymous functions, Function attributes, Built-in functions, One final</p>                                                                                                                                                               |

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| example, Documenting your code, Importing objects, Saving Time and Memory: The map, zip, and filter functions, Comprehensions, Generators, OOP, Decorators, and Iterators: Decorators, A decorator factory, Object-oriented programming (OOP).                                                                                                                                                                                                                                                                                                                                               |
| <b>( 12 Hours )</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>UNIT III</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Files and Data Persistence: Working with files and directories, Data interchange formats, IO, streams, and requests, Persisting data on disk, Data Science: IPython and Jupyter Notebook, Dealing with data, Web Development: What is the web? How does the web work?, The Django web framework, A regex website, The future of web development.                                                                                                                                                                                                                                             |
| <b>( 12 Hours )</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>Textbooks :</p> <ol style="list-style-type: none"> <li>1. “Learn Python Programming The no-nonsense, beginner's guide to programming, data science, and web development with Python 3.7”, Fabrizio Romano, Second Edition, 2018.</li> <li>2. “Python for Everybody: Exploring Data Using Python 3”, Charles R. Severance, 1st Edition, CreateSpace Independent Publishing Platform, 2016.</li> <li>3. “Learning Python for Forensics - Leverage the power of Python in forensic investigations”, Preston Miller, Chapin Bryce, Packt Publishing, Second Edition, 2019</li> </ol>          |
| <b>CSCS 406 : E-COMMERCE AND E-GOVERNANCE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>Course Objectives :</p> <p>To make the student aware of the ways in which the business has been shifted online</p> <ol style="list-style-type: none"> <li>1. To make the student aware of the different technologies used in e-Business</li> </ol>                                                                                                                                                                                                                                                                                                                                        |
| <p>Course Outcomes :</p> <ol style="list-style-type: none"> <li>1. Student gets the skills to understand the components of the e-Business</li> <li>2. Student gets the difference between different ways doing business online</li> </ol>                                                                                                                                                                                                                                                                                                                                                    |
| <b>UNIT I</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| eBusiness Framework: Defining Electronic Business, Case Studies : Electronic Shop (B2C), Electronic Health Market (B2B), Electronic Voting and Elections (A2C), Knowledge Exchange via Electronic Books (C2C), eProducts and eServices: Components of a Business Model, Anatomy of an Electronic Marketplace, Classification of Business Webs According to Tapscott, Comparison and Valuation of Networks, The Price Formation Process, eProcurement: Strategic and Operational Procurement, Information Support for Procurement, Basic Types of eProcurement Solutions, Catalog Management. |