

MADURAI KAMARAJ UNIVERSITY

(University with Potential for Excellence)

B.Sc., Computer Science (Digital Forensic Science and Cyber Security) – Semester

CHOICE BASED CREDIT SYSTEM REVISED SYLLABUS

(This will be effective from the academic year 2018 – 2019 & 2023-2024)

PROGRAM NAME: B.Sc Computer Science [Digital Forensic Science and Cyber Security]

PROGRAM CODE: SCTP

Outcome of the Program:

- Conduct Digital Investigations that confirm to accepted professional standards and are based on the investigative process: identification, preservation, examination, analysis and reporting.
- Cite and adhere to the highest professional and ethical standards of conduct, including impartiality and the protection of personal privacy.
- Identify and document potential security breaches of computer data that suggest violations of legal, ethical, moral, policy and/or societal standards.

Semester I

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| Subject: Core I-C Programming | | | | | | | |
| Subject Code: SCTPC11 | | | | | | | |
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| CO1 | To learn how to write a basic programs in C programming and learn about the basic methods in C programming | | | | | | |
| CO2 | To learn the syntax and semantics of the functions and structures and unions | | | | | | |
| CO3 | To learn how to design C classes for code reuse. | | | | | | |
| CO4 | To learn about the user-defined functions, return values and their types, function calling | | | | | | |
| CO5 | To learn about the accessing the address of a variables, initialization of pointer variables | | | | | | |
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| Subject Name :Core II - Programming in C Lab | | | | | |
| Subject Code : SCTPC1P | | | | | |
| CO1 | To learn how to write inline functions for efficiency and performance. | | | | |
| CO2 | To learn the syntax and semantics of the C programming language. | | | | |
| CO3 | To learn how to design C classes for code reuse. | | | | |
| CO4 | To learn how to use Structures | | | | |
| CO5 | To learn how to use pointer | | | | |
| Subject: Allied - I- Discrete Mathematical Structures | | | | | |
| Subject Code: SCTPT11 | | | | | |
| CO1 | Construct mathematical arguments of set theory, Relations, functions operations and groups. | | | | |
| CO2 | Verify the correctness of truth table implications and equivalent of formulae. | | | | |
| CO3 | Demonstrate the ability to solve problems in inverse of matrix, rank of a matrix | | | | |
| CO4 | Solve problems in graph theory, degrees and sub graphs. | | | | |
| CO5 | Construction of eulerian graphs, Hamiltonian graphs | | | | |
| Subject: Office Automation | | | | | |
| Subject Code: SCTPS11 | | | | | |
| CO1 | To learn and create the word document to prepare your resume by formatting the text alignment and font style | | | | |
| CO2 | To learn and create the Worksheet in Excel to prepare salary bill by showing Basic pay, DA, HRA, Gross Salary, PF, Tax and Net salary | | | | |
| CO3 | To learn and create a PowerPoint presentation to explain various aspects of your college using auto play | | | | |
| CO4 | To learn and create a table for sorting marks of students and enter the fields like Reg.No, name, mark1, mark2, and mark3, total=mark1+mark2+mark3 and avg(tot/3) in MS ACCESS | | | | |
| CO5 | To learn and create a form to enter the data directly into this form requires as Basic pay, DA, HRA,GROSS SALARY, PF, INCOME TAX AND NET SALARY | | | | |
| Subject: Problem Solving Techniques | | | | | |



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| Subject Code: SCTPF11 | | | | | | | |
| CO1 | Understand the systematic approach to problem solving | | | | | | |
| CO2 | Know the approach and algorithms to solve specific fundamentals | | | | | | |
| CO3 | Understand the efficient approach to solve specific fundamentals problem | | | | | | |
| CO4 | Understand the efficient array –related techniques to solve specific problems. | | | | | | |
| CO5 | Understand the efficient methods to solve specific problems related to text processing understand recursion work. | | | | | | |

Semester II

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| Subject: Core-I Data Structures and Computer Algorithms | | | | | | | |
| Subject Code: SCTPC21 | | | | | | | |
| CO1 | Search – Algorithm to search an item in a data structure. | | | | | | |
| CO2 | A data structure is a particular way of organizing data in a computer so that it can be used effectively. | | | | | | |
| CO3 | Almost every enterprise application uses various types of data structures in one or the other way. | | | | | | |
| CO4 | Data Structures needed to understand the complexity of enterprise level applications and need of algorithms, and data structures. | | | | | | |
| CO5 | Processor speed although being very high, falls limited if the data grows to billion records. | | | | | | |

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| Subject: Core-II-Data structures and computer Algorithms lab with C/C++ | | | | | | | |
| Subject Code: SCTLC2P | | | | | | | |
| CO1 | A data structure is a particular way of organizing data in a computer so that it can be used effectively. | | | | | | |
| CO2 | Almost every enterprise application uses various types of data structures in one or the other way. | | | | | | |
| CO3 | Data Structures needed to understand the complexity of enterprise level applications and need of algorithms, and data structures. | | | | | | |



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| CO4 | Processor speed although being very high, falls limited if the data grows to billion records. |
| CO5 | Search – Algorithm to search an item in a data structure. |
| Subject: Allied -I-Numerical Methods | |
| Subject Code:SCTPT21 | |
| CO1 | Know how to solve various problem on numerical methods |
| CO2 | Use approximation to solve problems . |
| CO3 | Differential and integration concept are applied. |
| CO4 | Apply, direct methods for solving liner system. |
| CO5 | Numerical solution of ordinary differential equations. |
| Subject: Skill based-Quantitative Aptitude | |
| Subject Code:SCTPS21 | |
| CO1 | To gain knowledge on LCM and HCF and its related problems |
| CO2 | To get an idea of age, profit and loss related problem solving |
| CO3 | Able to understand time series simple and compound interests |
| CO4 | Understanding the problem related to probability and series . |
| CO5 | Able to understand graphs,charts. |
| Subject: Skill Based – Advanced Excel Lab | |
| Subject Code: SCTPS2P | |
| CO1 | Handle numeric data and summarize into categories and subcategories |
| CO2 | Filtering sorting and grouping data or subsets of data |
| CO3 | Handling large amount of data |
| CO4 | Create pivot tables to consolidate data from multiple files |
| CO5 | Presenting data in the form of chart and graphs |



Semester III

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| Subject: Core-I- Operating System design and implementation | | | | |
| Subject Code: SCTLC31 | | | | |
| CO1 | A successful student will be able to understand the basic components of a computer operating system, and the interactions among the various components | | | |
| CO2 | The course will cover an introduction on the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems. | | | |
| CO3 | An operating system is a software programme required to manage and operate a computing device like smart phones, tablets, computers, supercomputers, web servers, cars, network towers, smart watches, etc. | | | |
| CO4 | It is the operating system that eliminates the need to know coding language to interact with computing devices. | | | |
| CO5 | An Operating System (OS) is an interface between a computer user and computer hardware. | | | |

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| Subject: Core-II- Operating System design and implementation Lab | | | | |
| Subject Code: SCTLC3P | | | | |
| CO1 | A successful student will be able to understand the basic components of a computer operating system, and the interactions among the various components | | | |
| CO2 | The course will cover an introduction on the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems. | | | |
| CO3 | An operating system is a software programme required to manage and operate a computing device like smart phones, tablets, computers, supercomputers, web servers, cars, network towers, smart watches, etc. | | | |



Subject : Core –I-Ethical hacking Fundamentals

Subject Code: SCTL41

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| CO1 | To understand hacking methods |
| CO2 | Using Attacks and methodology, web and networking |
| CO3 | Use of report and mitigation |
| CO4 | Apply, networking hacking methods |
| CO5 | To understand the basic hacking penetration |

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| Subject: Core-I- Ethical Fundamentals lab | | | | | | |
| Subject Code: SCTL4P | | | | | | |
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| CO1 | To introduce the ethical hacking methodologies | | | | | |
| CO2 | To understand the basic concept of hacking | | | | | |
| CO3 | To gain knowledge about ethical hacking testing | | | | | |
| CO4 | To apply all hacking methods | | | | | |
| CO5 | To gain knowledge ethical hacking testing | | | | | |

Subject: Core-II-Computer Network

Subject Code:SCTL42

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| CO1 | A computer network, also referred to as a data network, is a series of interconnected nodes that can receive and exchange data, voice and video traffic. |
| CO2 | Computer networks commonly help endpoint users share resources and communicate. |
| CO3 | These interconnections are made up of telecommunication network technologies, based on physically optical, and wireless radio-frequency methods that may be arranged in a variety of network topologies. |
| CO4 | The nodes of a computer network may include personal computers, servers, networking hardware, or specialised or general-purpose hosts. |
| CO5 | Hostnames serve as memorable labels for the nodes, rarely changed after initial assignment. |

Subject: Numerical Methods

Subject Code:SCTLA41



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| CO1 | Know how to solve various problem on numerical methods |
| CO2 | Use approximation to solve problems . |
| CO3 | Differential and integration concept are applied. |
| CO4 | Apply, direct methods for solving liner system. |
| CO5 | Numerical solution of ordinary differential equations. |
| Subject: PHP Programming | |
| Subject Code: SCTLS4P | |
| CO1 | Know how to solve various problem on numerical methods |
| CO2 | Use approximation to solve problems . |
| CO3 | Differential and integration concept are applied. |
| CO4 | Apply, direct methods for solving liner system. |
| CO5 | Numerical solution of ordinary differential equations. |

Semester V

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| Subject: Core-I-Relational Database management system | |
| Subject Code: SCTLC51 | |
| CO1 | A database management system (or DBMS) is essentially nothing more than a computerized data-keeping system. |
| CO2 | DBMS Tutorial provides basic and advanced concepts of Database. Our DBMS Tutorial is designed for beginners and professionals both. |
| CO3 | Our DBMS Tutorial includes all topics of DBMS such as introduction, ER model, keys, relational model, join operation, SQL, functional dependency, transaction, concurrency control, etc. |
| CO4 | DBMS provides an interface to perform various operations like database creation, storing data in it, updating data, creating a table in the database and a lot more. |
| CO5 | It uses a digital repository established on a server to store and manage the information. |



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| Subject: Corell-Computer Forensics and investigations | |
| Subject Code: SCTL52 | |
| CO1 | A database management system (or DBMS) is essentially nothing more than a computerized data-keeping system. |
| CO2 | DBMS Tutorial provides basic and advanced concepts of Database. Our DBMS Tutorial is designed for beginners and professionals both. |
| CO3 | Our DBMS Tutorial includes all topics of DBMS such as introduction, ER model, keys, relational model, join operation, SQL, functional dependency, transaction, concurrency control, etc. |
| CO4 | DBMS provides an interface to perform various operations like database creation, storing data in it, updating data, creating a table in the database and a lot more. |
| CO5 | It uses a digital repository established on a server to store and manage the information. |

Subject : Core-III: Software Engineering

Subject Code: SCTL53

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| CO1 | Software Engineering Tutorial delivers basic and advanced concepts of Software Engineering. |
| CO2 | Software Engineering provides a standard procedure to design and develop software. |
| CO3 | Software subsists of carefully-organized instructions and code written by developers on any of various particular computer languages. |
| CO4 | Computer programs and related documentation such as requirements, design models and user manuals. |
| CO5 | The necessity of software engineering appears because of a higher rate of progress in user requirements and the environment on which the program is working. |

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| Subject : Core-I: Computer Forensics Lab | |
| Subject Code: SCTL5P | |
| CO1 | To understand hacking methods |
| CO2 | Using Attacks and methodology, web and networking |
| CO3 | To gain knowledge on network data and analysis |
| CO4 | To password encryption techniques |
| CO5 | To internet forensics and malware analysis |



Subject: Elective-I- Fundamentals of Information Security

Subject Code: SCTLT51

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| CO1 | Acquire background on well known network security protocols such as IPSec, SSL, and WEP. |
| CO2 | Understand vulnerability analysis of network security. |
| CO3 | Information Security, sometimes shortened to InfoSec, is the practice of protecting information by mitigating information risks. It is part of information risk management |
| CO4 | It typically involves preventing or reducing the probability of unauthorized/inappropriate access to data, or the unlawful use, disclosure, disruption, deletion, corruption, modification, inspection, recording, or devaluation of information. |
| CO5 | Information security's primary focus is the balanced protection of the confidentiality, integrity, and availability of data (also known as the CIA triad) while maintaining a focus on efficient policy implementation, all without hampering organization productivity. |

Subject: Core-II- Python Programming Lab

Subject Code: SCTL5P

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| CO1 | To understand the problem solving approaches |
| CO2 | To learn the basic programming constructs in python |
| CO3 | To practice various computing strategies for python-based solution to real world problem |
| CO4 | To use python data structure –lists, tuples, dictionaries |
| CO5 | To do input/output with files in python. |



Semester VI

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| Subject: Core-I- Technological methods in Forensics science | |
| Subject Code: SCTLC61 | |
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| CO1 | Explain the origins of forensic science. |
| CO2 | Explain the difference between scientific conclusions and legal decision-making |
| CO3 | To use digital forensics and the relationship of digital forensics |
| CO4 | To traditional forensic science, traditional science and the appropriate use of scientific methods. |
| CO5 | Learning about the origin, identification, and advanced concepts of fingerprint development |
| Subject: Core-II- Web Applications Security Lab | |
| Subject Code: SCTLC6P | |
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| CO1 | Exhibit knowledge to secure corrupted systems, protect personal data, and secure computer networks in an Organization. |
| CO2 | Practice with an expertise in academics to design and implement security solutions. |
| CO3 | Understand key terms and concepts in Cryptography, Governance and Compliance. |
| CO4 | Develop cyber security strategies and policies |
| CO5 | Understand principles of web security and to guarantee a secure network |



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| Subject: Core-II- Cryptography | |
| Subject Code: SCTLC62 | |
| CO1 | Understand the basic of concepts of cryptography |
| CO2 | To gain knowledge on cryptography |
| CO3 | Impart the concept of Cyber law |
| CO4 | To gain knowledge on networking cryptography |
| CO5 | To apply the cryptography and encryption and techniques |

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| Subject: Skill based-II- Quantitative Aptitude | |
| Subject Code: SCTLS61 | |
| CO1 | To understand the basic concepts of numbers |
| CO2 | Understand any apply the concepts of percentage profit & loss |
| CO3 | To study the basic concept of time and work,interests |
| CO4 | To learn the concept of permutation, probability, discounts |
| CO5 | To study about the concept of data representation, graph |

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| Subject: Elective I- Cyber Criminology | |
| Subject Code: SCTLC62 | |
| CO1 | Understand Cyber Space, Cyber Crime, InformationTechnology, Internet & Services. |
| CO2 | List and discuss variousforms of Cyber Crimes |
| CO3 | Explain Computer and Cyber Crimes |
| CO4 | Understand Cyber Crime at Global and Indian Perspective |
| CO5 | Describe the ways of precaution and prevention of Cyber Crime as well as Human Rights. |


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