ST. ANTONY'S COLLEGE

PERUVANTHANAM

(AFFILIATED TO MG UNIVERSITY, ACCREDITED BY GOVT. OF KERALA)

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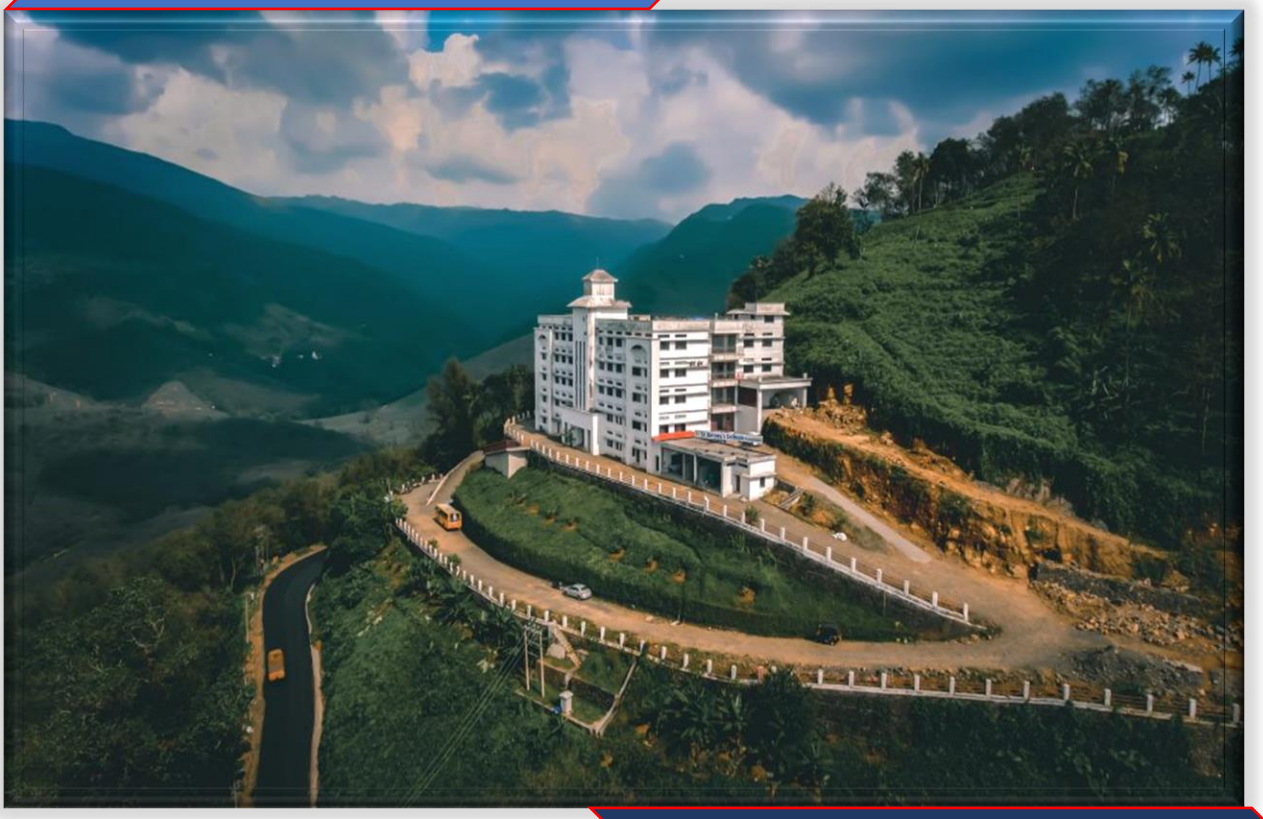

BSC.CYBER FORENSIC

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BSC CYBER FORENSIC PROGRAMME SPECIFIC OUTCOMES

1. Analyze and resolve security issues in networks and computer systems.
2. Develop effective tools for cloud security, web application security etc.
3. Expose the students to learn the importance of cyber forensic such as cyber policing, malware analysis and cyber threat.
4. Understand the threats in networks and security concepts.
5. Develop, share and implement best cybersecurity methods against data theft.
6. Analyze various cyber threats and perform defense mechanisms.

CORE COURSE

COURSE OUTCOMES

NAME OF THE PROGRAMME: CYBER FORENSIC			
COURSE CODE	**COURSE TITLE**	**COURSE OUTCOMES**	
SEMESTER 1			
CF1CRT01	Computer Organization	CO1	Able to understand the Basic components of a computer system
		CO2	To know the background internal communication of Computer
		CO3	To understand the Memory Hierarchy in a computer system and implementation of arithmetic unit in a computer system
		CO4	Able to understand the role of processor in a computer system
		CO5	Able to understand the Input/output organization in computer
CF1CRT02	INTRODUCTION TO PROGRAMMING	CO1	Understand the basic principles of programming, including data types, control structures, functions, and algorithms.
		CO2	Understand the concept of debugging, including techniques for finding and fixing errors in code.

		CO3	Understand the principles of object-oriented programming, including classes, objects, and inheritance.
		CO4	Write code in a programming language
		CO5	Work effectively in teams
CF1CRP01	SOFTWARE LAB 1	CO1	A C++ software lab course aims to provide students with hands-on experience in designing and implementing software using the C++ programming language
		CO2	Develop software solutions using the C++ programming language, including the use of data structures, algorithms, and object-oriented programming concepts.
		CO3	Understand the process of software development, including design, coding, testing, and debugging.
		CO4	Apply programming principles to real-world problems
		CO5	Understand programming language syntax and semantics
SEMESTER 2			
CF2CRT03	Introduction to Cyber Forensics & Cyber Laws	CO1	To control the criminal activities in the money transactions, e-commerce, website management, social networking etc.,
		CO2	Provide legal assistance and advice to one, who have been affected by misuse of cyberspace and connected services
		CO3	Provide advice, inputs as also guidance to students on their

			day-to-day legal issues concerning the use of cyberspace
		CO4	**To ensure the safety of protected data. By knowing what cyber law is, one can easily adopt preventative measures.**
		CO5	**To be a safety net against online data predators.**
CF2CRT04	**DATA STRUCTURES USING C++**	**CO1**	**Understanding of basic data structures.**
		CO2	**Students will learn about the fundamental data structures, such as arrays.**
		CO3	**Analyzing algorithms: Students will develop the ability to analyze the time and space complexities of various algorithms**
		CO4	**Work effectively in teams**
		CO5	**Develop problem-solving skills**
CF2CRP02	**SOFTWARE LAB 2**	**CO1**	**Students should develop skills in programming.**
		CO2	**Students should understand the importance of efficiency analysis .**
		CO3	**Students should develop problem-solving skills and the ability to apply data structures and algorithms to solve real-world problems.**
		CO4	**Be able to analyze the time and space complexity of algorithms and data structures.**

		CO5	The ability to apply data structures and algorithms to solve real-world problems.
SEMESTER 3			
CF3CRT05	OPERATING SYSTEMS AND SYSTEM SOFTWARE	CO1	Understanding of the operating system's functions and components
		CO2	Students will learn about the different components of an operating system, such as process management…
		CO3	Knowledge of operating system architecture
		CO4	Analyze the behavior of operating systems
		CO5	Understand virtualization technologies
CF3CRT06	Computer Networks and Network Security	CO 1	Communicate effectively in a variety of professional contexts
		CO2	Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
		CO3	Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
		CO4	Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles

		CO5	Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline
CF3CRT07	Biometric Security	CO 1	Understand the importance of biometric security in daily life.
		CO2	Familiar with different types of biometric methods.
		CO3	How to implement biometric security.
		CO4	Knowledge on the implementation of DNA biometrics.
		CO5	Familiarization with iris scan.
CF3CRT08	Microprocessors	CO1	Develop programs for microprocessor
		CO2	Evaluate the appropriateness of a memory expansion interface based on the address reference with particular application.
		CO3	Outline the history of computing devices
		CO4	Describe the architectures of 8085 and 8086 microprocessors.
		CO5	Understand and classify the instruction set of 8085/8086 microprocessor and distinguish the use of different instructions.
CF3CRT09	LINUX AND JAVA PROGRAMMING	CO1	Students should gain a solid understanding of Linux operating system fundamentals.

		CO2	Students should become proficient in Java programming language, including the syntax
		CO3	Students should be able to design, implement, and test Java applications using Linux-based tools and environments.
		CO4	Develop networked applications in Java
		CO5	Understand security issues in Java applications
CF3CRP03	Software Lab 3 and Security Lab 1	COI	Implement cyber security solutions and use of cyber security, information assurance, and cyber forensics software tools.
		CO2	Exhibit knowledge to secure corrupted systems, protect personal data, and secure computer networks in an Organization.
		CO3	Analyze and evaluate the cyber security needs of an organization.
		CO4	Students will be able to create file systems and directories and operate them
		CO5	Able to write programs for solving real world problems using java collection frame work
SEMESTER 4			
CF4CRT10	Database Management Systems and Security	CO1	The students will be able to define program-data independence, data models for database systems,

			database schema and database instances
		CO2	Understand the basics and concepts of database systems.
		CO3	Design, implement and evaluate a computer-based system, process and program.
		CO4	Extend normalization for the development of application software.
		CO5	Demonstrate the basic elements of a relational database management system.
CF4CRT11	Software Engineering	CO1	To know how to develop and deliver quality software within budget and time.
		CO2	Gain knowledge about various software lifecycle models.
		CO3	Abletoknowtheroleofsoftwareengineerandlearnaboutvarioussoftwaretesting methods.
		CO4	The course covers project management techniques such as scheduling, budgeting..
		CO5	The course provides students with skills to work effectively in teams
CF4CRT12	APPLIED CRYPTOGRAPHY	CO1	This course gives an introduction to cryptographic protocols and primitives, with focus on their applications.
		CO2	The goal of cryptography is information protection by the use of cryptographic primitives
		CO3	Cryptography provides tools to keep information secret from unauthorized parties who do not possess a secret key.

		CO4	Apply cryptographic principles to real-world problems:
		CO5	Understand current trends and future directions in cryptography
CF4CRP04	Software Lab 4	CO1	Develop database modeling for a problem.
		CO2	Implement a database query language.
		CO3	Understand various advanced queries execution such as relational constraints, joins, set operations, aggregate functions, trigger, views and embedded SQL
		CO4	The student is expected to practice the designing, developing and querying a database.
		CO5	Ability to formulate queries using SQL DML/DDL/DCL commands.
CF4CRP05	SECURITY LAB2	CO1	Understanding of security concepts
		CO2	Practical skills: A security lab course should provide hands-on experience with various security tools and techniques
		CO3	Critical thinking: Through analyzing and solving security problems, students should develop critical thinking skills.
		CO4	Conduct vulnerability assessments and penetration testing
		CO5	Implement secure coding practices
SEMESTER 5			

CF5CRT13	**Programming in Python**	**CO1**	**To learn how to design and program Python applications.**
		CO2	**To learn how to use lists, tuples, and dictionaries and identify Python object types in Python programs.**
		CO3	**To learn how to use exception handling in Python applications for error handling**
		CO4	**To define the structure and components of a Python program.**
		CO5	**To learn how to use indexing and slicing to access data in Python programs.**
CF5CRT14	**Web Programming using .net**	**CO1**	**The student will be able to use the features of Dot Net Framework along with the features of C#**
		CO2	**Able to develop programs using session management and user's preference in ASP.NET**
		CO3	**Learn about the benefits of ASP.NET over Classic ASP and also the Client-Server architecture.**
		CO4	**To learn about basic features of ASP.NET and its controls**
		CO5	**To create an ASP.NET application using standard .NET Controls**
CF5CRT15	**Preserving and Recovering Digital Evidence**	**CO1**	**The students should be able to explain Digital evidence, computer crime and Laws**

			Illustrate the Computer basics for digital investigators.
		CO2	**Able to learn about Investigating computer intrusions and cyber stalking**
		CO3	**To learn about basic concepts of how to handle the digital crime scene, digital evidence examination guidelines.**
		CO4	**Explain Digital evidence and computer crime and Laws**
		CO5	**Recognize that increased use of technology increases evidence.**
CF5CRT16	**Environmental Studies and Human Rights**	**CO1**	**To gain knowledge about environmental consciousness and the culture of human health.**
		CO2	**Able to define the concepts related to environmental issues.**
		CO3	**The programme provides the student with the capacity to identify issues and problems relating to the realisation of human rights, and strengthens the ability to contribute to the resolution of human rights issues and problems. It also develops investigative and analytical skills.**
		CO4	**Articulate the interconnected and interdisciplinary nature of environmental studies**
		CO5	**Understand and evaluate the global scale of environmental problems**

CF5CRP06	**Mini Project Using Python**	**CO1**	**Students will learn to develop various useful applications and games using Python.**
		CO2	**Able to overcome different types of errors.**
		CO3	**Able to develop real world applications using python**
		CO4	**Students will be able to practice acquired knowledge within the chosen area of technology for project development.**
		CO5	**Identify, discuss and justify the technical aspects of the chosen project with a comprehensive and systematic approach.**
CF6CRT17	**Ethical Hacking And Digital Forensics**	**CO1**	**Students should be able to: Plan a vulnerability assessment and penetration test for a network.**
		CO2	**They can execute a penetration test using standard hacking tools in an ethical manner. Report on the strengths and vulnerabilities of the tested network.**
		CO3	**Students can focus on identifying, acquiring, processing, analysing, and reporting on data stored electronically.**
		CO4	**Explain aspects of security, importance of data gathering, footprinting and system hacking.**
		CO5	**Demonstrate how intruders escalate privileges.**
SEMESTER 6			

CF6CRT18	**Mobile and Wireless Security**	**CO1**	**To Diagnose distributed denial of-service attacks and specify mitigation techniques and Explain the vulnerabilities introduced into an infrastructure by wireless and cellular technologies.**
		CO2	**Recommend security hardening techniques for wireless or mobile technologies.**
		CO3	**Compare and contrast the needs of law-enforcement versus individual right-to-privacy in wireless infrastructures.**
		CO4	**Familiarize with the issues and technologies involved in designing a wireless and mobile system that is robust against various attacks.**
		CO5	**Gain knowledge and understanding of the various ways in which wireless networks can be attacked and tradeoffs in protecting networks.**
CF6SMP07	**Seminar**	**CO1**	**To identify practical learning skills and concepts that will promote students' academic success.**
		CO2	**To encourage students to explore the connection between university study and life enrichment, lifelong learning, and civic responsibility.**
		CO3	**To promote respect for diversity issues and concepts.**

		CO4	**Students will engage with important questions that stimulate discussion and debate.**
		CO5	**Students will be able to reach across diverse disciplines to apply theories, methods and knowledge bases from multiple fields to a single question or problem.**
CF6CRP08	**Project**	**CO1**	**Students will learn to develop various useful applications and games using Python.**
		CO2	**Able to overcome different types of errors.**
		CO3	**Able to develop real world applications using python.**
		CO4	**For a selected research topic, students will be able to plan a research design including the sampling, observational, statistical and operational designs**
		CO5	**Students will be able to create a logically coherent project report and will be able to defend his / her work in front of a panel of examiners**

COMPLEMENTARY COURSE

COURSE OUTCOMES

NAME OF THE PROGRAMME: CYBER FORENSIC			
COURSE CODE	**COURSE TITLE**	**COURSE OUTCOMES**	
SEMESTER 1			
EL1CMT06	Fundamentals of Digital Systems	COI	Represent and manipulate information in digital systems, and apply these concepts to performing computer arithmetic.
		CO2	Provides a deep knowledge about logic gates and Digital circuits
		CO3	Provides knowledge about combinational circuits, flipflops, karnaugh map
		CO4	Explains number systems and convert number systems
		CO5	Explains the simplification of logical statements with using boolean rules and de-morgan theorems
MM1CMT03	DISCRETE MATHEMATICS 1	COI	To familiarize sets and functions
		CO2	To know the concept of number theory and cryptosystem
		CO3	To understand logic operators and rules of inference
		CO4	To understand relation and its properties

		CO5	To understand sequences and summation
SEMESTER 2			
EL2CMT07	Data Communication	CO1	To understand the types of signals and data to be used for communication
		CO2	To gain knowledge on how can we transmit data using transmission media
		CO3	To learn about the conversion of analog to digital signal.
		CO4	To impart knowledge of frequency modulation and phase modulation.
		CO5	Familiarization with FDM, WDM and TDM.
MM2CMT03	DISCRETE MATHEMATICS 2	CO1	To familiarize the basic concepts of graph and graph models
		CO2	To understand the ideas of trees and their properties
		CO3	To know the concept of Boolean functions
		CO4	To understand Symmetric, Skew-symmetric, Conjugate, Hermitian, Skew-hermitian matrices.
		CO5	To learn how to determine rank by Row Canonical form and Normal form
SEMESTER 4			
MM4CMT03	OPERATIONS RESEARCH	CO1	To understand the mathematical formulation of a LPP
		CO2	To identify the Transportation Problem and formulate it as an LPP

			and hence solve the problem
		CO3	To familiarize with the concept of Game Theory
		CO4	To study transportation and assignment problems
		CO5	To study about two-person zero sum games.

OPEN COURSE

COURSE OUTCOMES

NAME OF THE PROGRAMME:			
COURSE CODE	COURSE TITLE	COURSE OUTCOMES	
SEMESTER 5			
		COI	
		CO2	
		CO3	

OPTIONAL COURSE

COURSE OUTCOMES

NAME OF THE PROGRAMME:			
COURSE CODE	COURSE TITLE	COURSE OUTCOMES	
SEMESTER 6			
		COI	
		CO2	
		CO3	
		CO4	
		CO5	

COMMON COURSE

ENGLISH

NAME OF THE PROGRAMME	COURSE CODE	COURSE TITLE	COURSE OUTCOMES	
	SEMESTER 1			
BSC CYBER FORENSIC	EN1CCT01	FINE TUNE YOUR ENGLISH	CO1	Student will confidently use English in both written and spoken forms.
			CO2	Use English for formal communication effectively.
			CO3	Develop communicative skills effectively.
			CO4	Improve their knowledge in the structure of grammar for effective, concise and grammatically correct language uses.
			CO5	Generate simple sentences containing learned vocabulary and appropriate grammatical structures
	SEMESTER 2			
BSC CYBER FORENSIC	EN2CCTC03	ISSUES THAT MATTER	CO1	Students will identify the major contemporary issues.
			CO2	Respond rationally and

				positively to the issues raised.
			CO3	**Internalise the values imparted through the selections.**
			CO4	**Evaluate the consequences of personal, lifestyle choices on ecological/human itarian crises.**
			CO5	**Make informed, sustainable choices and decisions in everyday life.**