



BACHELOR OF SCIENCE IN CYBER SECURITY

PROGRAMME CODE: CY

CHOICE BASED CREDIT SYSTEM (CBCS) &

LEARNING OUTCOMES-BASED CURRICULUM FRAMEWORK (LOCF)

SCHEME OF EXAMINATION & SYLLABUS

(w.e.f 2026 onwards)

REGULATIONS 2026

UNDERGRADUATE PROGRAMMES

SCHEME OF EXAMINATION

Sem	Part	Course Code	Course Title	Course Type	Hours/ Week	Credits	Examination			
							Duration in Hours	Maximum Marks		
								CA	ESE	TOTAL
I	I	TAM2601	Tamil Paper I	AEC	4	3	3	25	75	100
		HIN2601	Hindi Paper I							
		FRE2601	French Paper I							
	II	ENG2601	English Paper I	AEC	4	3	3	25	75	100
	III	CY26C01	Core I: Problem Solving Techniques in C	DSC	5	4	3	25	75	100
		CY26CP1	Core Practical I: C Programming and Cyber Security Tools Lab	DSC	4	3	3	15	35	50*
		CY26C02	Core II:IT Fundamentals for Cyber Security	DSC	5	4	3	25	75	100
		TH26A03	Generic Elective I: Numerical and Statistical Techniques	MDC	6	5	3	25	75	100
	IV	NME26B1	Basic Tamil I	AEC	2	2	-	100*		100
		NME26A1	Advanced Tamil I							
		NME26ES	Introduction to Entrepreneurship	VAC						
I - II	VI	NM26GAW	General Awareness	VAC	SS	-	-	-	-	-
I - II		COM26SER	Community Services 30 Hours	VAC	-	-	-	-	-	-
I - V		26BONL1 26BONL2 26BONL3	Online Course I Online Course II Online Course III	ACC	-	-	-	-	-	-
Semester I Total					30	24				650
II	I	TAM2602	Tamil Paper II	AEC	4	3	3	25	75	100
		HIN2602	Hindi Paper II							
		FRE2602	French Paper II							
	II	ENG2602	English Paper II	AEC	4	3	3	25	75	100
	III	IN26C03	Core III: Python Programming	DSC	5	3	3	25	75	100
		CY26CP2	Core Practical II: Python Programming and OS Security Lab	DSC	5	3	3	15	35	50*
		CY26C04	Core IV: Operating Systems and Security	DSC	4	3	3	25	75	100
		TH26A12	Generic Elective II: Number Theory	MDC	6	5	3	25	75	100

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			and Algebra							
	IV	NME26B2	Basic Tamil II	AEC	2 ^e	Gr.		100*	-	100
		NME26A2	Advanced Tamil II							
		NM26UHR	Universal Human Values and Human Rights	VAC	2	2	-	100*	-	100
I - II	VI	NM26GAW	General Awareness	VAC	SS	Gr.	-	100*		100
I - II		COM26SER	Community Services 30 Hours	VAC	-	St.	-	-	-	-
I - V		26BONL1 26BONL2 26BONL3	Online Course I Online Course II Online Course III	ACC	-	-	-	-	-	-
Semester II Total					30	22				850
III	I	TAM2603	Tamil Paper III	AEC	4	3	3	25	75	100
		HIN2603	Hindi Paper III							
		FRE2603	French Paper III							
	II	ENG2603	English Paper III	AEC	4	3	3	25	75	100
	III	IN26C05	Core V: Database Management System	DSC	5	4	3	25	75	100
		CY26CP3	Core Practical III: DBMS lab	DSC	5	3	3	15	35	50
		CY26C06	Core VI: Computer Networks and Security	DSC	5	3	3	25	75	100
		TH26A20	Generic Elective III: Optimization Techniques	MDC	4	3	3	25	75	100
	IV	NM26DRM	Disaster Risk Reduction and Management	SEC	3	3	-	100*	-	100
		NM26HAW	Health and Wellness ^e	VAC		1	-	100*	-	100
I - V	VI	26BONL1 26BONL2 26BONL3	Online Course I Online Course II Online Course III	ACC	-	-	-	-	-	-
Semester III Total					30	23				750
IV	I	TAM2604	Tamil Paper IV	AEC	4	3	3	25	75	100
		HIN2604	Hindi Paper IV							
		FRE2604	French Paper IV							
	II	ENG2604	English Paper IV	AEC	4	3	3	25	75	100
	III	CY26C07	Core VII: Data Structures and Algorithms	DSC	4	3	3	25	75	100
		CY26C08	Core VIII: Vulnerability Assessment and Penetration Testing	DSC	5	4	3	25	75	100

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		CY26CP4	Core Practical IV: VAPT Lab	DSC	4	3	2	15	35	50*
		CY26A01	Generic Elective IV: Cyber Security and Cyber Law (OR)	MDC	4	3	3	25	75	100
		CY26A02	Generic Elective IV: Cyber Threats and Modeling	MDC						
		CY26SCE1	Foundations of Cyber Security	SEC	3	3	-	100*	-	100
		NM26EII	Entrepreneurship and Innovation (IgniteX)	VAC	2	2	-	100*	-	100
		NM26EVS	Environmental Studies	VAC	SS	Gr.	-	100*	-	100
	V	26COACT	Co-Curricular Activities	VAC	-	1	-	100*	-	100
I - V	VI	26BONL1 26BONL2 26BONL3	Online Course I Online Course II Online Course III	ACC	-	-	-	-	-	-
Semester IV Total					30	25				950
V	III	CY26C09	Core IX: Machine Learning	DSC	5	4	3	25	75	100
		CY26C10	Core X: Ethical Hacking	DSC	5	4	3	25	75	100
		CY26C11	Core XI: Software Engineering and Testing	DSC	5	4	3	25	75	100
		CY26CP5	Core Practical V: Ethical Hacking Lab	DSC	5	3	3	15	35	50*
		CY26E01	Elective I: Cloud Security (OR)	DSE	5	4	3	25	75	100
		CY26E02	Elective I: Web Application Security							
		CY26AC1	Advance Learner Course I: Data Security (OR)	ACC	SS	5^	3	25	75	100^
		CY26AC2	Advance Learner Course I: Artificial Intelligence							
	IV	CY26SBP1	Mobile app Development	SEC	3	3	1	100*	-	100
		NM26CS1	Cyber Security I	VAC	2	Gr.	-	100*	-	100
		CY26INST	Field work/ Institutional Training (21 Days)	VAC	-	2	-	100*	-	100
	VI	CY26COM	Comprehensive Examination	DSC	-	Gr.	-	100*	-	100
I - V	VI	26BONL1 26BONL2 26BONL3	Online Course I Online Course II Online Course III	ACC	-	Cr. ^ /St.	-	-	-	-
Semester V Total					30	24				850
VI	III	CY26C12	Core XII: Malware Analysis	DSC	5	4	3	25	75	100

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		CY26C13	Core XII: Digital Forensics	DSC	5	3	3	25	75	100
		CY26CP6	Core Practical VI: Malware Analysis Lab	DSC	5	3	6	15	35	50*
		CY26E03	Elective II: IoT and Security (OR)	DSE	5	4	3	25	75	100
		CY26E05	Elective II Block Chain and Technology							
	IV	CY26SBP2	Digital Forensics Lab	SEC	3	3	1	100*	-	100
		CY26PROJ	Project and Viva-voce	DSE	7	5	-	25	75	100
	III	CY26AC3	Advance Learner Course II: Big Data Analytics (OR)	ACC	SS	5^	3	25	75	100^
		CY26AC4	Advance Learner Course II: Operation Technology							
Semester VI Total					30	22				550
I - VI	Total					140 + Addit ional Credi ts				4100 + Mark for Additio nal Credit Courses

Hours of Instructions is inclusive of lectures, seminars, presentations, case-studies, etc

SYLLABUS
FIRST SEMESTER

Course Code	Course Title	Hours			Credits
		Total	Lecture	Examination	
CY26C01	Core I: Problem Solving Techniques in C	75	70	5	4

Preamble

- Introduces fundamental problem-solving approaches and programming concepts using the C language.
- It emphasizes algorithmic thinking, logical reasoning, and structured programming techniques required for developing efficient programs.
- Students learn to translate computational problems into algorithms, flowcharts, and C programs using variables, control structures, arrays, functions, pointers, and file handling mechanisms.
- The course also develops analytical abilities required for debugging and optimizing programs. It provides a strong foundation for advanced programming and cyber security–related computing applications.

Prerequisite

Students should possess basic knowledge of computer fundamentals, logical reasoning, and elementary mathematical concepts to understand problem-solving approaches and programming logic.

Course Learning Outcomes (CLOs)

On the successful completion of the course, students will be able to,

CLO No	Course Learning Outcome	Bloom's Level
CLO1	Recall fundamental concepts of problem solving, algorithms, flowcharts, and basic C programming elements.	K1
CLO2	Explain the structure of C programs and the role of data types, operators, control statements, arrays, and functions in program development.	K2
CLO3	Apply C programming constructs such as decision statements, loops, arrays, and functions to implement solutions for simple computational problems.	K3
CLO4	Analyze program logic and computational problems to identify errors, optimize solutions, and select appropriate programming structures.	K4

CLO5	Evaluate alternative programming approaches using functions, pointers, structures, and file operations to determine efficient problem-solving strategies.	K5
CLO6	Develop structured C programs integrating arrays, functions, pointers, and file handling techniques to solve real-world computational problems.	K6
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create		

PROBLEM SOLVING TECHNIQUES IN C (CY26C01) (70 Hrs)

Unit I (14 hrs)

Introduction: Introduction to problem solving Concept – Steps for problem solving - Problem solving techniques — Algorithms – flowcharts – Types of Algorithms – Use flowcharts to represent algorithms – Pseudo code.

Unit II (14 hrs)

Overview of C - Constants, Variables and Data types - Operators and Expressions - Managing Input and Output Operations -Sulba Sutras-Decision Making and Branching - Decision Making and Looping.

Unit III (14 hrs)

Shloka Arrays: One-Dimensional - Two Dimensional - Multidimensional Arrays-Character Arrays and Strings: Declaring and Initializing String Variables - Reading Strings from Terminal - Writing Strings to Screen - String Handling Functions.

Unit IV (14 hrs)

Chandas -User-Defined Functions: Need - Return Values and Types - Function Calls – Function declaration - Category of Functions - No Arguments and No Return Values - Arguments but No Return Values - Arguments with Return Values - Recursion - Scope Visibility and Life time of Variables Structures and Unions - Definition: Structure Initialization - Comparison of Structure Variables - Arrays of Structures - Arrays within Structures - Unions.

Unit V**(14 hrs)**

Pointers: Understanding Pointers - Accessing the Address of a Variable - Declaring and Initializing Pointers - Accessing a Variable through its Pointers - Pointers and Arrays. File Management in C: Defining and Opening a File - Closing File - I/O Operations on Files - Dynamic Memory allocation MALLOC, CALLOC, REALLOC.

Text Books

S.No.	Authors	Title	Publisher	Year & Edition
1	E. Balagurusamy	Programming In ANSI C	Tata Mc Graw Hill	2019, 8 th Edition

Reference Books

S.No.	Authors	Title	Publisher	Year & Edition
1	Byron Gottfried	Programming with C	Tata McGraw Hill	2018, 4 th Edition
2	Yashwvant Kanetkar	Let Us C: Authentic Guide To C Programming Language	BPB Publications	2020, 17 th Edition

Related Online References

1. Problem Solving techniques in C – studocu - <https://www.studocu.com/in/document/bengaluru-north-university/bca/problem-solving-techniques-using-c/16264070>

Pedagogy

The course will be delivered using a combination of traditional and learner-centered teaching methods, including:

- Lecture - Chalk and Talk
- PowerPoint presentations
- E-content and digital learning resources
- Numerical problem-solving exercises
- Group discussions
- Assignments

- Quizzes
- Peer learning activities
- Student seminars

Course Designers & Teaching–Learning Strategies

Course Code & Title	CY26C01, Core I: Problem Solving Techniques in C
Course Designers	Dr. G. Sophia Reena, Dr. K. Geethalakshmi, M. Selvanayaki
Teaching–Learning Strategies	Participatory Learning: 40.91 %
	Experiential Learning: 36.37 %
	Problem-based Learning: 22.72 %

Course Code	Course Title	Hours			Credits
		Total	Lecture	Examination	
CY26CP1	Core Practical I: C Programming and Cyber Security Tools Lab	60	-	3	3

Preamble

- This course provides hands-on training in C programming and introductory cyber security tools. Students practice developing programs using fundamental C constructs such as control structures, arrays, strings, functions, structures, and pointers.
- It emphasizes logical thinking and problem-solving through practical implementation of programming exercises.
- Students gain practical exposure to virtualization and cyber security tools by configuring Kali Linux environments and performing basic network analysis.
- Course also provides activities such as network scanning, port identification, and packet sniffing help students understand the fundamentals of network monitoring and security analysis

Prerequisite

Students should possess a basic understanding of computer fundamentals, C Programming and operating system concepts. Familiarity with basic programming logic, algorithms, and simple networking concepts will help students effectively perform programming exercises and understand the functioning of cyber security tools used in the laboratory. Basic knowledge of command-line operations and file handling in a computer environment is also desirable

Course Learning Outcomes (CLOs)

On the successful completion of the course, students will be able to,

CLO No	Course Learning Outcome	Bloom's Level
CLO1	Recall the syntax, structure, and basic concepts of the C programming language and fundamental cyber security tools.	K1
CLO2	Explain the working principles of control structures, arrays, strings, functions, and basic network scanning tools used in cyber security.	K2
CLO3	Implement C programs using arrays, strings, structures, functions, and pointers to solve computational problems.	K3

CLO4	Analyze program execution and network scanning results to identify logical errors, open ports, and network behavior.	K4
CLO5	Evaluate network security information obtained from tools such as Nmap and Wireshark to determine potential vulnerabilities.	K5
CLO6	Develop integrated C programs and perform basic cyber security tasks using virtual machines and network analysis tools.	K6
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create		

C PROGRAMMING AND CYBER SECURITY TOOLS LAB (CY26CP1)

Programs List

- Exercise in basics Operations Statement.
- Exercise in Control Structures.
- Exercise in arrays.
- Exercise in String handling functions.
- Exercise in User defined functions
- Exercise in Structure.
- Exercise in Pointers.
- Set up Kali Linux in a virtual machine and set up a network Adapter.
- Scan the network for Kali Linux and Windows target machines in local network and virtual network.
- Identify the open ports using NMAP.
- Sniffing using Wireshark Tool.

Pedagogy

The course will be delivered using a combination of traditional and learner-centered teaching methods, including:

- Demonstration of working environment / Tools / Software / Program

Course Designers & Teaching–Learning Strategies

Course Code & Title	CY26CP1, Core Practical I: C Programming and Cyber Security Tools Lab
Course Designers	Dr. R. Divya
Teaching–Learning Strategies	Participatory Learning: 40.91 %
	Experiential Learning: 36.37 %
	Problem-based Learning: 22.72 %

Course Code	Course Title	Hours			Credits
		Total	Lecture	Examination	
CY26C02	Core II: IT Fundamentals for Cyber Security	75	70	5	4

Preamble

- Introduces the fundamental concepts of information technology and cyber security required for understanding modern computing environments.
- It emphasizes knowledge of computer organization, input and output devices, memory systems, and number systems that form the basis of computing operations.
- The course also explores the principles of information security, cyber threats, and attack mechanisms that affect digital systems and students are exposed to widely used cyber security tools and techniques for identifying vulnerabilities and monitoring network activities.
- The course provides the overview of the cybercrime, security models, and risk management strategies to develop awareness of safe and responsible use of digital technologies

Prerequisite

Basic knowledge of computer fundamentals and digital systems. Familiarity with basic computer operations, internet usage, and elementary mathematical concepts such as number systems and binary operations will support effective understanding of the course.

CLO No	Course Learning Outcome	Bloom's Level
CLO1	Recall the fundamental concepts of computer systems, number systems, and basic cyber security terminology.	K1
CLO2	Explain the functional units of computers, information security principles, and types of cyber threats and attacks.	K2
CLO3	Apply number system conversions, binary operations, and basic cyber security tools to perform simple computing and security tasks.	K3
CLO4	Analyze different types of cyber-attacks, vulnerabilities, and security mechanisms in computing environments.	K4
CLO5	Evaluate cyber security risks, cybercrime scenarios, and defensive strategies using appropriate security models and tools.	K5
CLO6	Develop basic security awareness strategies or preventive measures to mitigate cyber threats in computing environments.	K6

IT FUNDAMENTALS FOR CYBER SECURITY (CY26C03) (70 Hrs)

Unit I (14 Hrs)

Introduction: Generations of Computer, Types of Computers - Functional units of a computer system- Input Devices -Output devices – Memory – Storage Devices. Number Systems: Decimal, Binary, Octal and Hexadecimal – Conversion –Computer Codes- Binary Addition, Subtraction- Complements.

Unit II (14 Hrs)

Information security: History of IS-What is security -characteristic of IS-components of an Information system –Security System Development Life Cycle model. – Information Security for technical Administrators: server security- network security.

Unit III (14 Hrs)

Introduction to Cyber Security: Basic Cyber Security Concepts, layers of security, Vulnerability, threat, Harmful acts, Challenges and Constraints, Computer Criminals -Assets and Threat, motive of attackers, active attacks, passive attacks, Software attacks, hardware attacks, Spectrum of attacks- CIA Triad -Taxonomy of various attacks, IP spoofing-Types of Threats.

Unit IV (14 Hrs)

Cyber Security Tools - Kali Linux – Nmap – Wireshark – Metasploit – Burpsuite - Sql Injection- Password Cracking Tool.

Unit V (14 Hrs)

Cybercrime: Definition and Origin of the World-Cybercrime and Information Security- Cyber Criminals –Classification of Cybercrimes- Methods of defense, Security Models, risk management, Cyber Threats- Cyber Warfare, Cyber Crime, Cyber terrorism, Cyber Espionage.

*** Course Alignment with SDGs: 4**

Text Books

S. No	Author	Title of the Book	Publishers	Year and Edition
1	P K Sinha & Priti Sinha	Computer Fundamentals	BPB Publications	2017, 6 th Edition
2	Donaldson, S., Siegel, S., Williams, C.K., Aslam, A	Enterprise Cyber security -How to Build a Successful Cyber defense Program against Advanced Threats	A Press	2015, 1 st Edition
3	Nina Godbole, Sumit Belapure	Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives,	Wiley	2011, 1 st Edition

Reference Books

S. No	Author	Title of the Book	Publishers	Year and Edition
1	Devan N. Shah	Information Security Principles and Practice	Wiley India	2009, 1 st Edition
2	George K. Kostopoulous	Cyber Space and Cyber Security	CRC Press	2013, 1 st Edition

Related Online References

IT Fundamentals for Cyber Security-https://www.tutorialspoint.com/computer_fundamentals
<https://www.nist.gov/cyberframework>

Pedagogy

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- Lecture - Chalk and Talk
- PowerPoint presentations
- E-content and digital learning resources
- Numerical problem-solving exercises
- Group discussions
- Assignments

- Quizzes
- Peer learning activities
- Student seminars

Course Designers & Teaching–Learning Strategies

Course Code & Title	CY26C02, Core II:IT Fundamentals for Cyber Security
Course Designers	M. Selvanayaki, Dr. R. Divya
Teaching–Learning Strategies	Participatory Learning: 40.91 %
	Experiential Learning: 36.37 %
	Problem-based Learning: 22.72 %