Department of Computer Science with Cyber Security

Board of Studies Meeting

The minutes of the 1st meeting of the Board of Studies held on 04.04.2024 at 10.00 am at the IQAC Board Room.

Members Present:

S.No.	Name	Category
1	Dr. V. Shobana	Chairman
2	Dr. Shina Sheen, Professor and Head, Department of Applied Mathematics and Computational Sciences, PSG College of Technology, Coimbatore.	Subject Expert
3	Dr. Ambili. P. S. Associate Professor, School of Computer Science and Applications, Reva University, Bengaluru.	Subject Expert
4	Dr. N. Kuppuchamy	Co-opted Member
5	Dr. A. Hazel Verbina	Co-opted Member
6	Dr. R. Sowrirajan	Co-opted Member
7	Ms. A. Vinitha	Member
8	Ms. V. Abinayaa	Member
9	Ms. Mirulashini Thangavelu I B.Sc. CS CY	Student Representative

The HoD and Chairman of the Department of Computer Science with Cyber Security welcomed and introduced all the members and appreciated them for their continuous support, contribution for the development of academic standard and enrichment of the syllabus.

Further, Chairman informed the inability of the following members to attend the meeting and requested to grant leave of absence.

1. Mr. M. Ajith- Industrial Expert

The Chairman also informed the board members that the VC nominee is yet to be appointed from the university.

The items of the agenda were taken one by one for discussion and the following resolutions were passed.

Item 1.1: *To consider and approve the scheme, regulation and syllabi for I semester for the students admitted during the academic year 2024-25.*

The chairman presented the detailed scheme, regulation and syllabus for the I semester for the students admitted during the academic year 2024-25. The members deliberated in detail about the modification required. After discussion it is unanimously decided to adopt the following changes.

Changes Made:

Course Code	Course	Changes & Reason
24MTU1ID	Mathematics for Computing I	• Interpolation has been removed and matrices has been expanded since understanding matrices and their properties is essential for various applications as suggested by Dr. Shina

New Courses Introduced:

Course Code	Course	Changes & Reason
24CYU1CA	Digital Logic Design	• To upgrade the syllabus to include design principles and analyzing complex computer architectures. • Memory Organization can have all types of memory including cache memory as suggested by Dr. Shina.

Courses Removed:

Course Code	Course	Changes & Reason
-	Nil	-

After discussion the following resolution was passed with the above changes and modifications.

Resolution:

Resolved to approve the above modification and adopt revised scheme And Syllabus for students admitted during the academic year 2024-2025.

Item 1.2: *To consider and approve the syllabi for III semester for the students admitted during the academic year 2023-24.*

The Chairman presented the detailed syllabus for the III semester for the students admitted during the academic year 2023-24.

The details of changes made also presented as follows:

New Courses Introduced:

B.Sc. Computer Science with Cyber Security		
Course Code	**Course**	**Changes & Reason**
234CY1A3CA	Core: Computer Architecture	• To impart students with knowledge on optimizing performance, power efficiency, and reliability in processor design which is essential for security professionals. • Parallel Processing concepts can be introduced as suggested by Dr. Ambili.
234CY1A3CB	Core: Operating Systems Fundamentals	• To impart knowledge on the working of computer systems making students as a cybersecurity professional to effectively secure, monitor, and defend computer systems. • Virtualization concept is introduced as suggested by Dr. Shina.
234CY1A3EP	Embedded Core: Database Design Concepts	• To impart fundamental knowledge on Databases. • Database security can be incorporated as suggested by Dr. Shina
234CY1A3SP	SEC I: Python Programming	• To introduce skills for automating tasks, secure web applications, and leverage advanced security techniques. • Python libraries can be introduced as suggested by Dr. Ambili.
232MT1A3ID	IDC: Discrete Mathematics	• To impart knowledge on discrete fundamentals.
234CY1ASSA	Self-Study: Digital marketing	• To introduce marketing channels, strategies and online campaigns.
234CY1ASSB	Self-Study: Web Essentials	• Fundamentals of internet, web operations and understanding of potential vulnerabilities and attack vectors.

Courses Removed:

Course Code	Course	Changes & Reason
NA		

After discussion the following resolution was passed with the above changes and modifications.

Resolution:

Resolved to approve the syllabus for the III semester for the students admitted during the academic year 2023-24.

Item 1.3: *To approve the panel of examiners for question paper setting and evaluation of answer scripts for the odd semester of the academic year 2024-25.*

The Chairman presented the panel of examiners for Question paper setting, Question paper Scrutiny and conduct of practical and theory examinations and the same shall be submitted to CoE for the odd semester of the academic year 2024-25.

Resolution:

Resolved to approve the panel of examiners for Question paper setting, Question paper Scrutiny and conduct of practical and theory examinations for the odd semester of the academic year 2024-2025.

Item 1.4: *To consider and approve any other item brought forward by the Chairman and the members of the board.*

Discussed Value Added Certificate Course on Threat Analysis using Wireshark to provide a hands-on experience on how to analyze the Cyber Threats.

Resolution

Resolved to approve the value added certificate course.

Finally, the Chairman thanked all the members for their cooperation and contribution in enriching the syllabus with active participation in the meeting and sought the same spirit in the future also. The meeting was closed with a formal vote of thanks proposed by Dr. V. Shobana, Head and Chairman- Computer Science with Cyber Security BoS.

Date:04.04.2024

(Dr. V. Shobana)

BoS Chairman / HoD
Dept. of Computer Science with Cyber Security
Dr. N.G.P. Arts and Science
Coimbatore - 641 048

Syllabus Revision

Faculty: Computer Science **Board: Computer Science with Cyber Security**
Semester: I
Course Code/ Name: 24MTU11D - Mathematics for Computing I

Unit	Existing	Changes
I	**Systems of Linear equations** Introduction to system of linear equations- - linear systems in two and three unknown - augmented matrices and elementary row operations - Gaussian elimination- Matrices and Matrix operations - inverses - algebraic properties of matrices - elementary matrices -method for finding - invertible matrices - ~~diagonal matrices - triangular matrices - symmetric matrices~~	**Systems of Linear Equations:** Introduction to system of linear equations-linear systems in two and three unknown - augmented matrices and elementary row operations Gaussian elimination- Matrices and Matrix operations - inverses - algebraic properties of matrices - elementary matrices - method for finding - invertible matrices
II	**Determinants** Introduction - determinants by cofactor expansion- minors and cofactors - technique for evaluating 2×2 and 3×3 determinants - evaluating determinants by row reduction - elementary row operations - Matrices with proportional rows or columns - properties of determinants - Cramer's rule.	**Matrix Transformations and Applications:** Diagonal matrices - triangular matrices - symmetric matrices - Matrix Transformations - Network Analysis - Electrical Circuits - Balancing Chemical Equations - Polynomial Interpolation - Leontief Input-Output Models
III	**Eigen values and Eigen Vectors** Definition of eigenvalues and eigenvectors - computing eigenvalues and eigenvectors - Diagonalization - Geometric and Algebraic multiplicity - complex vector spaces - vectors in Cn - differential equations - first order linear systems - solution by diagonalization	**Determinants** Introduction - determinants by cofactor expansion- minors and cofactors - technique for evaluating 2×2 and 3×3 determinants - evaluating determinants by row reduction -elementary row operations - Matrices with proportional rows or columns - properties of determinants - Cramer's rule.
IV	**Solution of Algebraic, Transcendental Equations and Linear Systems** Introduction - Newton-Raphson Method-Direct methods - Matrix inversion method - Gaussian elimination method - Gauss Jordan method - Iterative methods - Gauss Seidel Method - Gauss Jacobi method	**Eigen values and Eigen Vectors** Definition of eigenvalues and eigenvectors - computing eigenvalues and eigenvectors - Diagonalization - Geometric and Algebraic multiplicity - complex vector spaces - vectors in Cn - differential equations - first order linear systems - solution by diagonalization
V	~~**Interpolation, Numerical Differentiation and Integration**~~ ~~Introduction - Finite differences - Newton's formulae for interpolation - Interpolation with unevenly spaced points: Lagrange's interpolation formula - Numerical differentiation - maximum and minimum values of a tabulated function- Numerical integration - Trapezoidal rule - Simpson's 1/3 rule - Simpson's 3/8 rule.~~	**Solution of Algebraic, Transcendental Equations and Linear Systems** Introduction - Newton-Raphson Method-Direct methods -Matrix inversion method - Gaussian elimination method - Gauss Jordan method - Iterative methods - Gauss Seidel Method - Gauss Jacobi method

PERCENTAGE OF SYLLABUS REVISED: 30%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

Syllabus (New Course)

Faculty: Computer Science **Board: Computer Science with Cyber Security**
Programme: B.Sc. Computer Science with Cyber Security **Semester: III**
Course Code/ Name: 234CYIA3CA / Computer Architecture

Unit	Contents
I	**Number System and Boolean Algebra** Binary Numbers- Number base conversions- Octal and Hexadecimal conversions- Compliments- Binary codes - Decimal codes. Basic Definitions-Boolean functions- Canonical standard forms: Minterms and Maxterms - Sum of Minterms-Product of Minterms-conversion between canonical forms
II	**Logic Gates and Boolean functions** Digital Logic Gates: AND, OR, Inverter, Buffer, NAND, NOT, Exclusive-OR, Exclusive-NOR. The Map Method-Two and three-variable Maps-Four variable Map - Five and Six-Variable Maps- Product of Sum simplification NAND and NOR Implementation- Don't care conditions.
III	**Combinational Logic** Adders: Half-Adder, Full-Adder. Subtractors Half-Subtractor, Full-Subtractor. Multilevel NAND Circuits: Universal Gate. Multilevel NOR Circuits: Universal Gate. Binary Parallel Adder- Decimal Adder - BCD Adder. Decoders: Demultiplexers-Encoders - Multiplexer
IV	**Sequential Logic** Introduction- Flip-flops-Clocked RS Flip-flop - D Flip-flop - JK Flip-flop - Design of Counters- Registers -Shift registers- Ripple Counters- Synchronous Counters- Error Correcting Codes.
V	**Memory Organization** Memory Hierarchy- Main memory- Auxiliary memory- Associative Memory- Cache Memory- Virtual memory- Memory Management Hardware.

PERCENTAGE OF SYLLABUS REVISED: 100%
COURSE FOCUSES ON:

✓	Skill Development		Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus (New Course)

Faculty: Computer Science **Board: Computer Science with Cyber Security**
Programme: B.Sc. Computer Science with Cyber Security **Semester: III**
Course Code/ Name: 234CY1A3CB / Operating Systems Fundamentals

Unit	Contents
I	**Introduction** Introduction- Operating System Structure- Operating System Operations- Computing Environments- Operating System Structures: Operating System Services- System Calls.
II	**Process Concepts and Threads** Process concepts - Process Creation – Process Termination - Process states - Process Description – Process Control. Threads: Processes and Threads – Thread States – Thread Synchronization – Types of Thread – Multithreading model.
III	**Process Scheduling and Deadlocks** CPU Scheduling - Basic Concepts - Scheduling Criteria - Scheduling Algorithms - Thread Scheduling - Multiple-Processor Scheduling - Deadlocks: Deadlock Characterization - Methods for Handling Deadlock - Deadlock Prevention - Deadlock Avoidance: Safe State - Resource-Allocation Graph Algorithm - Banker's Algorithm - Deadlock Detection - Recovery from Deadlock.
IV	**Memory Management** Memory Management: Swapping - Contiguous Memory Allocation - Paging – Structure of Page Table - Segmentation. Virtual Memory: Demand Paging - Page Replacement: Basic Page Replacement - FIFO Page Replacement - Optimal Page Replacement - LRU Page Replacement.
V	**File Management and Virtualization** File System Structure - File System Implementation - Directory Implementation - Allocation Methods - Free-space Management, Virtualization of CPU, Memory and I/O devices. Case Studies: Linux System, Mobile Operating System.

PERCENTAGE OF SYLLABUS REVISED: 100%
COURSE FOCUSES ON:

✓	Skill Development		Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus (New Course)

Faculty: Computer Science **Board: Computer Science with Cyber Security**
Programme: B.Sc. Computer Science with Cyber Security **Semester: III**
Course Code/ Name: 234CY1A3EP / Database Design Concepts

Unit	Contents
I	**Database Concepts** Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model– Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – De -normalization. 1.Develop a design for a database. 2.Creation of entity relationships diagram. 3.Apply normalization.
II	**Structured Query Language** Introduction to SQL – SQL Data Definition and Data types- Constraints in SQL-Basic Retrieval Queries- INSERT, DELETE and Update Statements in SQL- Data Manipulation Language (DML) – Adding a new Row/Record – Updating and Deleting Existing Rows/Records – Retrieving Data from a Table – Arithmetic Operations – Restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. 1.Creation of Tables 2.Modification of Tables 3.Implement constraints on tables.
III	**Advanced SQL** Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operators: Join – Set operators- Nested Queries and Subqueries. 1.Creation of functions 2.Perform join operations. 3.Creation of subqueries and nested queries.
IV	**Memory Management** PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks - Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Procedures- Functions- Packages and Triggers. 1.Working with PL/SQL basic commands. 2.Implement procedures and functions. 3.Working with packages and triggers.
V	**Transaction Management** Transactions: Transaction Concept - A Simple Transaction Model - Storage Structure - Transaction Atomicity and Durability - Transaction Isolation - Serializability - Transaction Isolation and Atomicity - Transaction Isolation Levels - Implementation - Transactions as SQL Statements. Concurrency Control: Lock-Based Protocols - Deadlock Handling - Timestamp-Based Protocols - Validation-Based Protocols.

	1.Apply TCL commands in SQL. 2.Implement a stored procedure in SQL that performs multiple database operations within a single transaction.

PERCENTAGE OF SYLLABUS REVISED: 100%
COURSE FOCUSES ON:

✓	Skill Development		Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus (New Course)

Faculty: Computer Science **Board: Computer Science with Cyber Security**
Programme: B.Sc. Computer Science with Cyber Security ***Semester: III***
Course Code/ Name: 234CY1A3SP / Python Programming

Unit	Contents
1.	Implement Variables, Assignment and Standard Built-in Functions
2.	Demonstrate Operators and Numeric Type Functions
3.	Programs to explore Strings and String Operators.
4.	Implementation of String Built-in Methods
5.	Programs to implement Lists and List Built-in Methods
6.	Demonstrate the concepts of Tuple and Tuple Built-in Methods
7.	Implementation of Dictionaries and Built in Methods
8.	Implement the Conditional Statements
9.	Programs to implement Looping Statements
10.	Programs to implement Switch case, Break and Continue Statements
11.	Programs to implement Object Oriented Concepts.
12.	Programs to implement standard libraries in Python.

PERCENTAGE OF SYLLABUS REVISED: 100%
COURSE FOCUSES ON:

✓	Skill Development		Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus (New Course)

Faculty: Computer Science **Board: Computer Science with Cyber Security**
Programme: B.Sc. Computer Science with Cyber Security **Semester: III**
Course Code/ Name: 234CY1ASSA / Web Essentials

Unit	Contents
I	**Introduction to internet** Internet- Growth of Internet and ARPA Net–Owners of the Internet -Anatomy of Internet – History of WWW - Basic Internet Terminologies – Net etiquette - Internet Applications - Commerce on the Internet– Governance on the Internet - Impact of Internet on Society.
II	**Interconnectivity** Connectivity types - Setting up a connection – Hardware requirements- Selection of a modem - Software requirements – Internet accounts by ISP-ISDN-Protocol options-Service options. Internet Network: Network Definition Common terminologies – Node - Host-Workstation –Network Administrator - Network Components – Servers-client Server-Communication Media
III	**Browsers and Search Engines** Browsers - Parts of a browser Window-Running a browser - working with a Browser. Search engines: - Types of search engines - Search and meta search engines.
IV	**E-mail** E-mail - E-mail Networks and Servers - E-mail Protocols - Structure of E-mail -Attachments – E-mail Clients - E-mail Clients - web based E-mail-Address book – Signature File..
V	**HTML** Introduction to HTML – HTML browsers -Different versions of HTML-HTML tags - Document overview – Header elements - Section headings - Block headings - Lists-Inline elements – Images -working with Tables, Forms, Frames

PERCENTAGE OF SYLLABUS REVISED: 100%

Syllabus (New Course)

Faculty: Computer Science **Board: Computer Science with Cyber Security**
Programme: B.Sc. Computer Science with Cyber Security **Semester: III**
Course Code/ Name: 234CY1ASSB / Digital Marketing

Unit	Contents
I	**Importance of Marketing in Business** Marketing and its Business Importance –Structure – Objective – Begin with a plan - The digital marketing framework –Organizing your marketing plan to market your business - Content marketing- Content plans.
II	**Social media in business** Structure - objective – Social media landscape - Facebook – Content plan for social media - Improving the metric of fan page – Customize page tabs – Implement and monitor campaigns – Measuring impact – Measurement Analysis Optimization
III	**Social Ads** Structure – Objective – Choose the appropriate social network for your business – Making display ads meet your goals- Facebook Ads – Create and manage ads on Facebook – Run Campaign on Facebook – Setting up facebook and campaign
IV	**SEO (Search Engine Optimization)** SEO for Beginners – Structure – Objective – Search Engine Optimization – Relevance – Authority and SEO – Origin of SEO - Keywords for SEO – Legendary Onsite SEO analysis – Accessibility – Indexability
V	**Display Advertising** Display advertising to target your audience – Structure – Objectives – Working of display ads – Ad server – Direct response marketing – Branding – Different display advertising sales models.

PERCENTAGE OF SYLLABUS REVISED: 100%

Dr. N.G.P. ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)
Approved by Government of Tamil Nadu & Accredited by NAAC with A++ Grade (3rd Cycle 3.64 CGPA)
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ATTENDANCE OF THE FIRST BOARD OF STUDIES MEETING

Faculty: Faculty of Computer Science

Board: Computer Science with Cyber Security

VENUE : IQAC Board Room
DATE : 04.04.2024
TIME : 10.00 a.m.

The following members were present for the Board of Studies Meeting

S.NO.	NAME	DESIGNATION	SIGNATURE
1.	Dr. V. Shobana Associate Professor & Head Department of Computer Science with Cyber Security, Dr.N.G.P. Arts and Science College, Coimbatore-641048	Chairman	
2.	University Nominee (Subject Expert)	Member (Subject Expert) (Nominated by Vice Chancellor)	Yet to be appointed from university
3.	Dr. Shina Sheen Professor and Head, Department of Applied Mathematics and Computational Sciences, PSG College of Technology, Coimbatore.	Member (Subject Expert) (Nominated by Academic Council)	
4.	Dr. Ambili. P.S Associate Professor, School of Computer Science and Applications, Reva University, Bengaluru.	Member (Subject Expert) (Nominated by Academic Council)	
5.	Mr. Ajith. M Senior Project Engineer, Information Security Services C-DAC Hyderabad.	Member (Industrial expert)	ABSENT

S.NO.	NAME	DESIGNATION	SIGNATURE
6.	Dr. N. Kuppuchamy Professor & Head	Co-opted Member (Tamil)	
7.	Dr.A.Hazel Verbina Professor & Head (i/c)	Co-opted Member (English)	
8.	Dr. R. Sowrirajan Assistant Professor & Head	Co-opted Member (Mathematics)	
9.	Ms. A. Vinitha Assistant Professor	Member	
10.	Ms. V. Abinayaa Assistant Professor	Member	
11.	Ms. Mirulashini Thangavelu I B.Sc. CS CY	Student Representative	

Date: 04.04.2024

(Dr. V. Shobana)
BoS Chairman / HoD
Dept. of Computer Science with Cyber Security
Dr. N.G.P. Arts and Science College
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