



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)
Dr. N.G.P. - Kalapatti Road, Coimbatore - 641 048, Tamil Nadu, India
Web : www.drngpasc.ac.in | Email : info@drngpasc.ac.in | Phone : +91-422-2369100

BoS

14th

MINUTES OF THE FOURTEENTH BOARD OF STUDIES MEETING

Faculty: Computer Science

Board: Computer Science

The Meeting of Board of Studies (BoS) was held as given below:

Name of the Body	Board of Studies (BoS)
Department	Computer Science
Meeting No.	14
Date and Time	29.11.2022 @ 10.00 a.m.
Venue	Room No: 425
Members Attended	The details are given in the ANNEXURE -I

AGENDA

1.	Discussion on syllabi for Part III - Core Courses for second semester UG - 2022-23 Batch and onwards
2.	Discussion on syllabus for Part III- Inter Disciplinary Course (IDC) offered by other departments
3.	Discussion on syllabus for Part III- Inter Disciplinary Course (IDC) offered by Computer Science department.
4.	Discussion on Part I (Tamil/Hindi/French/Malayalam) offered by Language department for 2022-23 Batch and onwards
5.	Discussion on Part II (Professional English) offered by English Department for 2022-23 Batch and onwards
6.	Discussion on Part IV (AECC) Human Rights for 2022-23 Batch and onwards
7.	Discussion on Part V Extension Activity for II Semester UG 2022-23 Batch and onwards
8.	Discussion on syllabi for second semester courses PG - 2022-23 Batch and onwards
9.	Discussion on syllabus for Extra Disciplinary Course (EDC) offered by other department.
10.	Discussion on Value Added Certificate Courses (VACC) for UG 2021-23 batch and onwards
11.	Any Other Matters





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MINUTES OF THE FOURTEENTH BOARD OF STUDIES MEETING

Faculty: Computer Science

Board: Computer Science

The Chairman of BoS welcomed all the Panel members for the meeting. The items listed in the agenda were taken for discussion.

The following are the minutes of the meeting:

Item - 01	Discussion on syllabi for Part III - Core Courses for Second Semester UG - 2022-23 Batch and onwards
Discussion	224CS1A2CA: Object Oriented Programming with C++ <ul style="list-style-type: none">Dr. Ramya Chitra suggested to include Case Study in units 3 and 5.Mr. Koushik suggested to include Standard Template Library (STL) in unit 5. 224CA1A2CA: Data Structures <ul style="list-style-type: none">The unified syllabus approved by Board of Studies in Computer Applications was placed for endorsement. 224CS1A2CP: Data Structures and C++ <ul style="list-style-type: none">Dr. Radhika suggested to include STL in a program.
Resolution	The Board approved the syllabi for the above courses
Item-02	Discussion on syllabus for Part III- Inter Disciplinary Course (IDC) offered by other departments
Discussion	222MT1A2IC: Discrete Mathematics <ul style="list-style-type: none">The unified syllabus approved by Board of Studies in Mathematics was placed for endorsement.
Resolution	The Board approved the syllabus
Item - 03	Discussion on syllabus for Part III- Inter Disciplinary Course (IDC) offered by Computer Science department.
Discussion	224CS1A2IC – Smart Banking Technologies <ul style="list-style-type: none">Dr. Radhika suggested to include the recent trends in DevOps in unit 3. 224CS1A2IB – Python for Biologists <ul style="list-style-type: none">Mr. Koushik suggested to incorporate biological features in Python in unit 5.
Resolution	The Board approved the syllabus

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Item -04	Discussion on Part I (Tamil/Hindi/French/Malayalam) offered by Language department for 2022-23 Batch and onwards
Discussion	<p>2221TL1A2TA – Part I: Tamil-II: Ikkala Illakiyam/ 221TL1A2HA – Hindi-II: Modern Literature /221TL1A2FA – French-II: Grammar, Translation and Civilization / 221TL1A2MA - Malayalam – II: Modern Literature respectively.</p> <ul style="list-style-type: none">The unified syllabus approved by the Board of Studies in Languages was placed for endorsement.
Resolution	The Board unanimously approved the syllabus.
Item -05	Discussion on Part II (Professional English) offered by English Department for 2022-23 Batch and onwards
Discussion	<p>221EL1A2EA : Part II: Professional English II</p> <ul style="list-style-type: none">The unified syllabus approved by the Board of Studies in English was placed for endorsement.
Resolution	The Board approved the syllabus.
Item -06	Discussion on Part IV (AECC) Basic Tamil/Advanced Tamil/Human Rights and Women's Rights for II Semester UG for 2022-23 Batch and onwards.
Discussion	<p>221TLIA2AA :Basic Tamil The unified syllabus approved by the Board of Studies in Languages was placed for endorsement.</p> <p>221TLIA2AB: Advanced Tamil The unified syllabus approved by the Board of Studies in Languages was placed for endorsement.</p> <p>225CR1A2AA:Human Rights and Women's Rights The unified syllabus approved by the Board of Studies in Commerce with Corporate Secretaryship was placed for endorsement.</p>
Resolution	The Board approved the syllabus
Item – 07	Discussion on credits to Part V Extension Activity for II Semester UG 2022-23 Batch and onwards
Discussion	One credit to be awarded for participation in Extension Activity like NSS/NCC/YRC/RRC/ Yoga/Sports/Clubs

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	<p align="center">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) Dr. N.G.P. – Kalapatti Road, Coimbatore – 641 048, Tamil Nadu, India Web : www.drngpasc.ac.in Email : info@drngpasc.ac.in Phone : +91-422-2369100</p>	<p align="center">BoS</p> <hr/> <p align="center">14th</p>
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Resolution	The Board approved awarding one credit for extension activity.
Item - 08	Discussion on syllabi for Second semester courses PG - 2022-23 Batch and onwards
Discussion	<p>224CS2A2CB - Advanced Relational Database Management Systems (Existing)</p> <ul style="list-style-type: none"> Dr. Ramya Chitra suggested to incorporate Lock based Protocols in Unit V. <p>224CS2A2CQ-Advanced Relational Database Management Systems Lab(Existing)</p> <ul style="list-style-type: none"> Mr. Koushik suggested to include the implementation of Transaction Management in the laboratory list of practicals. <p>The following new courses were introduced to meet the industry needs.</p> <p>224CS2A2CA - Advanced Python Programming (Core)</p> <p>224CS2A2CC – Neural Networks and Fuzzy Logic (Core)</p> <p>224CS2A2CP - Advanced Python Programming (Practical)</p> <p>224CS2A2DA – Deep Learning (DSE)</p> <p>224CS2A2DB – Predictive Analytics (DSE)</p> <p>224CS2A2DC – Advanced Networks (DSE)</p> <ul style="list-style-type: none"> Dr. Ramya Chitra suggested to include Operations on Fuzzy Relations in unit 4 of Neural Networks and Fuzzy Logic Dr. Radhika suggested to include Cognitive Computing in unit 5 of Predictive Analytics to reinforce advanced computing concepts.
Resolution	After due deliberations, the board approved the syllabus
Item-09	Discussion on syllabus for Extra Disciplinary Course (EDC) offered by other department.
Discussion	<p>222MT2A2ED: Advanced Operations Research</p> <ul style="list-style-type: none"> The unified syllabus approved by Board of Studies in Mathematics was placed for endorsement.
Resolution	The Board unanimously approved the syllabus.
Item - 10	Discussion on Value Added Certificate Courses (VACC) for UG 2021-23 batch and onwards
Discussion	The board members discussed the VACC on Linux

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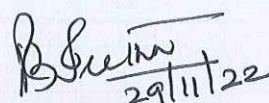
BoS

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Resolution	The Board approved the syllabus
Item – 11	Any other matters
Discussion	The board members discussed and recommended the Panel of Examiners
Resolution	The Board approved the same.

The Chairman of Board of Studies (BoS) thanked all the members for their active participation and providing their valuable suggestions.

Date: 29.11.2022


(Dr. B. Rosiline Jeetha)

BoS Chairman/HoD
Department of Computer Science
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048





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Syllabus Revision

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code / Name: 224AI1A1CA - Object Oriented Programming with C++

Unit	Existing	Changes
I	Object-Oriented Programming Paradigm - Basic Concepts of Object-Oriented Programming - Benefits of OOP Applications of OOP. Beginning with C++ Definition of C++ Applications of C++ - Structure of C++ Program. Tokens, Expressions and Control Structures: Operators in C++ Scope Resolution Operator Member dereferencing Operators Memory Management Operators - Manipulators - Typecast Operators - Control Structures.	Variable, Value and Constant- Order of Evaluation
II	Introduction - The Main Function - Function Prototyping - Call by Reference -Return by Reference - Inline Functions - Function Overloading - Friend and Virtual Functions. Specifying a Class - Defining Member Functions - Memory allocation for Objects - Static Data Members - Static Member Functions - Array of Objects-Objects as Function Arguments- Friendly Functions- Returning Objects - Constructors - Parameterized Constructors- Constructors with Default Arguments- Copy Constructor -Destructors.	Case Study: Wave Array
III	Introduction - Defining Operator Overloading- Overloading unary, binary operators and binary operators using Friends - Rules for Overloading Operators- Type conversions . Inheritance: Introduction Single, Multilevel, Multiple, Hierarchical, Hybrid inheritance - Virtual Base Classes - Abstract Classes	References - Pointers - Pointer Types and Pointer variables - Constant Modifiers - Pointer to Pointer- Arrays and Pointers - Strings: C ++ String Class -C++ String Library - Inheritance: Private, Public and Protected Inheritance - Association - Dependency.
IV	Strings: Introduction - Creating String Objects - Manipulating String Objects Relational Operations String Characteristics Accessing Characters in Strings Comparing and Swapping Pointers: Introduction - Pointer to Objects - this pointer- Polymorphism - Pointers to derived classes Virtual Functions - Pure Virtual Functions	Exception Handling: Approach- Exceptions in Classes - Standard Exception Classes-Overloading Principles - Overloading as Member- Nonmember- Templates: Function Template - Class Template.
V	Files: Introduction - Classes for File Stream Operations - Opening and Closing a File- Detecting End-of-File - More about Open(): File Modes - File Pointers and their Manipulations Sequential Input and Output Operations - Updating a File: Random Access - Command Line Arguments . Exception Handling: Introduction Basics of Exception Handling - Exception Handling Mechanism Throwing Mechanism Catching Mechanism Rethrowing an Exception .	String Streams - Formatting Data: Direct use of Flags, Fields and Variables - Predefined Manipulators-Standard Template Library: Iterators, Sequence Containers, Container Adapters

PERCENTAGE OF SYLLABUS REVISED : 40 %

COURSE FOCUSES ON:

<input checked="" type="checkbox"/> Skill Development	<input type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input type="checkbox"/> Innovations
<input type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
<input type="checkbox"/> Social Awareness/ Environment	<input type="checkbox"/> Constitutional Rights/ Human Values/ Ethics





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Syllabus Revision-New Course

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code / Name: 224CA1A2CA- Data Structures

Unit	Course Content
I	Introduction: Basic Terminology -Classification of Data Structures -Operations on Data Structures-Abstract Data Type-Algorithms-Time and Space Complexity -Big O Notation-Omega Notation (Ω) -Theta Notation (Θ). Arrays: Declaration of Arrays-Accessing the elements of an array-Storing values in Arrays-Operations on Arrays. Applications of Arrays: Sparse Matrices
II	Stacks: Array Representation of Stacks- Operations on a Stack-Linked Representation of Stacks - Applications of Stacks: Evaluation of Arithmetic Expression –Recursion. Queues: Array Representation of Queues - Operations on Queues -Linked Representation of Queues - Circular Queues -Applications of Queues: JOB Scheduling
III	Singly Linked Lists: Inserting a node in a Linked List- Deleting a node from a Linked List. Circular Linked Lists: Inserting a node in a Circular Linked List - Deleting a node from a Circular Linked List. Doubly Linked Lists: Inserting a node in a Doubly Linked List - Deleting a node from a Doubly Linked List. Applications of Linked Lists: Polynomial Addition
IV	Trees: Binary Trees – Representation of Binary Trees -Creating a Binary Tree - Traversing a Binary Tree- Binary Search Tree and its Operations - Threaded Binary Trees. Applications of Tree: Expression Trees. Graphs: Graph Terminology - Representation of Graphs - Graph Traversal Algorithms -Applications of Graphs: Shortest Path Algorithm - Dijkstra's Algorithm -Minimum Spanning Trees - Prim's Algorithm
V	Searching: Linear search –Binary Search. Sorting: Bubble Sort - Insertion Sort - Selection Sort – Quick Sort-Merge Sort -Heap Sort. Hashing and Collision: Hash Tables - Hash Functions - Collision. Applications of Hashing: Keyword Table in a Compiler

PERCENTAGE OF SYLLABUS REVISED: 36%

COURSE FOCUSES ON:

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics





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Syllabus Revision

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code / Name: 224CS1A2CP - Data Structures and C++

P. No.	Existing	Changes
1	Write a C++ Program to find the perfect number of a positive number using for loop	Implementation of Conditional Statements and Loops
2	Write a C++ program to implement Stack using array	
3	Write a C++ Program using constructors, destructors and inline member functions to read an integer number and find the sum of all the digits until it reduces to a single digit.	
4	Write a C++ Program to implement linked list	Implementation of linked list using arrays.
5	Write a C++ Program to create class, which consists of Employee details like E_Number, E_Name, Department, Basic Salary and Grade. Write amember function to get and display them. Derive a class Pay from theabove class and write a member function to calculate DA, HRA and PF depending on the grade using Multiple Inheritance.	
6	Write a C++ Program to implement binary search	Implementation of Search Algorithms.
7	Write a C++ Program to create a class String. Write a Member Function to initialize, get and display strings. Use Operator Overloading to concatenate and compare two strings.	Demonstrate Operator Overloading using Strings.
8	Write a C++ program to perform in order traversal of a tree.	Perform Tree Traversals.
9	Write a C++ program that copy contents of one file to another file.	Implementation of File Operations.
10	Write a C++ program to implement graph using adjacency matrix.	Implementation of graphs.
11	Write a C++ program to throw exception when entered marks are less than 0 or greater than 100.	
12	Write a C++ program to implement Insertion Sort.	Implementation of Sorting algorithms.

PERCENTAGE OF SYLLABUS REVISED: 75%

COURSE FOCUSES ON:

<input checked="" type="checkbox"/> Skill Development	<input type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input type="checkbox"/> Innovations
<input type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
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Syllabus Revision-New Course

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code/ Name: 222MT1A2IC - Discrete Mathematics


Unit	Course Content
I	Introduction - set and its elements - set description - types - Venn-Euler Diagrams - set operations and laws of set theory - fundamental products - index and indexed sets - partitions of sets - minsets - countable and uncountable sets - Algebra of sets and duality - computer representation - the inclusion and exclusion principle- Fuzzy sets.
II	Relations: Introduction - cartesian product of sets - binary relations – set operations on relations - types – partial order relations – equivalence relation and classes-Functions: Introduction - types – invertible functions - composition of functions.
III	Introduction - propositional calculus – basic logical operations - statements generated by a set - conditional statements -converse, inverse and contrapositive statements - biconditional - tautologies - contradiction - contingency - argument - methods of proof - equivalence and implication - predicate calculus-quantifiers.
IV	Introduction - paths, cycles and connectivity - subgraphs - types - isomorphic and homeomorphic graphs - representation of graphs in computer memory- Eulerian and Hamiltonion graphs-cartesian product- shortest path. Trees: Introduction - binary trees - complete binary tree - tree of an Algebraic expression - traversing binary trees.
V	Introduction - language: the set theory of strings - languages – regular expressions and regular languages – Grammar – finite state machine – finite state automata..

PERCENTAGE OF SYLLABUS REVISED: 20%

COURSE FOCUSES ON:

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
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Syllabus Revision-New Course

Faculty : Computer Science

Board : Computer Science

Semester: II

Course Code / Name: 224CS2A2CA - Advanced Python Programming

Unit	Course Content
I	Variables - Basic Program Structure - Conditional Operations - Iterative Routines - Functions and Modules - String - Tuple - List - Dictionary - Set - Operators with Sequences - Iterator - Slicing - Reversing - Sorting - Operations with Sequences - Operations with Sets – Frozen sets - Operations with Dictionaries.
II	Understanding Data Types in Python - The Basics of NumPy Arrays - Computation on NumPy Arrays: Universal Functions - Aggregations - Computation on Arrays: Broadcasting - Comparisons, Masks, and Boolean Logic - Fancy Indexing - Sorting Arrays - Structured Data: NumPy's Structured Arrays.
III	Installing and Using Pandas - Introducing Pandas Objects - Data Indexing and Selection - Operating on Data in Pandas - Handling Missing Data - Hierarchical Indexing - Combining Datasets: Concat and Append - Combining Datasets: Merge and Join - Aggregation and Grouping - Working with Time Series.
IV	Importing matplotlib- Setting Styles - Simple Line Plots - Simple Scatter Plots - Visualizing Errors - Density and Contour Plots - Histograms, Binnings, and Density - Customizing Plot Legends - Customizing Color bars - Multiple Subplots - Text and Annotation - Customizing Ticks - Three-Dimensional Plotting in Matplotlib - Visualization with Seaborn.
V	Machine Learning - Scikit-Learn - Hyperparameters and Model Validation - Feature Engineering - Naive Bayes Classification - Linear Regression - Decision Trees and Random Forests - Principal Component Analysis - k-Means Clustering. Case Study: A Face Detection Pipeline.

PERCENTAGE OF SYLLABUS REVISED: 100 %

COURSE FOCUSES ON:

<input checked="" type="checkbox"/>	Skill Development	<input checked="" type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input checked="" type="checkbox"/>	Innovations
<input checked="" type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
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Syllabus Revision

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code / Name: 224CS2A2CB - Advanced Relational Database Management Systems

Unit	Existing	Changes
I	Introduction to the Relational Model - Structure of Relational Databases - Database Schema - Keys - Schema Diagrams - Relational Query Languages - Relational Operations - Introduction to SQL- Overview of the SQL Query Language- SQL Data Definition- Basic Structure of SQL Queries- Additional Basic Operations- Set Operations - Null Values - Aggregate Functions - Nested Sub queries - Modification of the Database.	NIL
II	Join Expressions -Views - Transactions - Integrity Constraints - SQL Data Types and Schemas - Authorization -Accessing SQL from a Programming Language - Functions and Procedures - Triggers - Recursive Queries- Advanced Aggregation Features-OLAP.	NIL
III	Database Design and the E-R Model-Overview of the Design Process- The Entity Relationship Model - Constraints - Removing Redundant Attributes in Entity Sets - Entity-Relationship Diagrams - Reduction to Relational Schemas - Entity Relationship Design Issues - Extended E-R Features- Relational Database Design Features of Good Relational Designs - Atomic Domains and First Normal Form - Decomposition using Functional Dependencies.	NIL
IV	Query Processing - Overview - Measures of Query Cost - Selection Operation - Sorting - Join Operation - Other Operations - Evaluation of Expressions Transactions-Transaction Concept-A Simple Transaction Model - Storage Structure - Transaction Atomicity and Durability - Transaction Isolation - Serializability Transaction Isolation and Atomicity - Transaction Isolation Levels - Implementation of Isolation Levels - Transactions as SQL Statements.	NIL
V	Introduction to NoSQL Systems-Big Data and NoSQL, Types of Big Data-Processing NoSQL vs Relational Database-Types of NoSQL-databases-Oracle No-SQL High Level Architecture-Intelligent Client-Driver-Storage and Network Topology-Hashing, Partitions and Data Distribution-Storing Records-Log Structured Storage-Writing, Reading, Updating and Deleting Records.	Lock-Based Protocols-Deadlock Handling-Multiple Granularity-Insert Operations, Delete Operations, and Predicate Reads-Timestamp-Based Protocol-Validation-Based Protocols-Multi version Schemes-Snapshot Isolation-Failure Classification-Storage-Recovery and Atomicity-Recovery Algorithm-Buffer Management-Recovery in Main-Memory Databases.

PERCENTAGE OF SYLLABUS REVISED: 20%

COURSE FOCUSES ON:

<input checked="" type="checkbox"/>	Skill Development	<input checked="" type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input checked="" type="checkbox"/>	Innovations
<input checked="" type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
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Syllabus Revision-New Course

Faculty : Computer Science

Board : Computer Science

Semester: II

Course Code / Name: 224CSA2CP - Advanced Python Programming

P.No	List of Experiments
1.	Demonstrate Python Functions and Modules.
2.	Implement a Python program to perform List, Tuple, Dictionary operations.
3.	Develop a Python script to perform basic operations using NumPy.
4.	Create a structured array for the student's details which includes Student id, Student name, Height, Class and perform Sorting, Grouping operations.
5.	Implement Universal and Aggregate functions in NumPy.
6.	Implement Pandas to demonstrate data handling, indexing and Slicing Operations.
7.	IBuild a DataFrame and display the specific dictionary data that includes index and labels to perform: <ul style="list-style-type: none"> a) Display the summary details b) Count the number of rows and columns c) Select the specific rows and columns d) Count the number of rows with NaN values e) Iterate the DataFrame to display the specific rows
8.	Demonstrate on how to write a Python dictionary to a CSV file. After writing the CSV file, read the CSV file, perform preprocessing and basic operations on dataframe.
9.	Build a Dataset in Excel file and create a Python script to import Dataset into Pandas DataFrame and perform Read, Sort, Export operations in it.
10	Demonstrate use of Matplotlib modules in plotting.
11	Demonstrate Data Visualization using Seaborn.
12	Perform Data Analysis with Scikit-Learn.

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

<input checked="" type="checkbox"/>	Skill Development	<input checked="" type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input checked="" type="checkbox"/>	Innovations
<input checked="" type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
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BoS

14th

Syllabus Revision-New Course

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code/ Name: 224CS2A2CQ- Advanced Relational Database Management Systems

P.No	List of Experiments
1.	Implement DDL, DML and TCL Commands
2.	Demonstrate Data and Built in Functions in SQL.
3.	Perform Relational algebra queries for a set of relations.
4.	Implement different Normalization.
5.	Implementation of Views.
6.	Implementation of Cursors.
7.	Implementation of Triggers.
8.	PL/SQL Procedures and Functions.
9.	Error and Exception Handling.
10	Demonstrate E-R Diagram for The Database.
11	Implementation of Transaction Management.
12	Database Connectivity.

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

<input checked="" type="checkbox"/> Skill Development	<input checked="" type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovations
<input checked="" type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
<input type="checkbox"/> Social Awareness/ Environment	<input type="checkbox"/> Constitutional Rights/ Human Values/ Ethics





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14th

Syllabus Revision-New Course

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code / Name: 224CS2A2CC - Neural Networks and Fuzzy Logic

Unit	Course Content
I	Basic concepts of Neural Networks – Model of Artificial Neuron - Neural Network Architecture: Single Layer Feed Forward Network – Multilayer Feed Forward Network – Recurrent Networks – Characteristics of Neural Networks – Taxonomy of Neural Network Architectures – History of Neural Network Research – Early Neural Network Architectures - Some Application Domain.
II	Architecture of Back Propagation Network: The Perceptron Model- Single Layer Artificial Neural Network – Back Propagation Learning – Applications – Effect of Tuning Parameters of the Back propagation Neural Network- Selection of Various Parameters in BPN – Variation of standard Back Propagation Algorithm: Adaptive Back Propagation – Genetic Algorithm Based Back Propagation - Augmented BP Networks.
III	Introduction: Cluster structure – Vector Quantization – Classical ART Networks - Simplified ART Architecture – ART 1: Architecture – Special Features of ART1 Models – ART 1 Algorithm – ART 2: Architecture – ART 2 Algorithm – Applications: Character Recognition Using ART1 – Classification of Soil – Prediction of Load from Yield Line Patterns - Chinese Character Recognition..
IV	Fuzzy versus Crisp – Crisp Sets: Operation & Properties of Crisp Sets – Fuzzy Sets: Membership Function – Fuzzy Sets and Crisp Sets- Basic Fuzzy set operations -Properties of Fuzzy Sets– Crisp Relations: Cartesian Product - Crisp Product – Operations on Relations– Fuzzy Relations: Fuzzy Cartesian Product – Operations on Fuzzy Relations.
V	Crisp Logic: Laws of Propositional Logic – Inference in Propositional Logic – Predicate Logic: Interpretations of Predicate Logic Formula – Inference in Predicate Logic – Fuzzy Logic: Fuzzy Quantifiers – Fuzzy Inference -Fuzzy Rule Based System – Defuzzification Methods – Applications: Greg Viot's Fuzzy Cruise Controller – Air Conditioner Controller..

PERCENTAGE OF SYLLABUS REVISED: 100 %

COURSE FOCUSES ON:

<input checked="" type="checkbox"/>	Skill Development	<input checked="" type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input checked="" type="checkbox"/>	Innovations
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14th

Syllabus Revision-New Course

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code/ Name: 224CS2A2DA – Deep Learning

Unit	Course Content
I	Learning Algorithms - Capacity, Over fitting and Under fitting - Hyper parameters and Validation Sets, Maximum Likelihood Estimation- Bayesian Statistics - Supervised Learning Algorithms - Unsupervised Learning Algorithms - Stochastic Gradient Descent - Challenges Motivating Deep Learning.
II	Learning XOR - Gradient-Based Learning - Hidden Units - Architecture Design - Back-Propagation - Other Differentiation Algorithms.
III	Parameter Norm Penalties - Norm Penalties as Constrained Optimization - Regularization and Under-Constrained Problems - Dataset Augmentation - Noise Robustness - Semi-supervised learning - Multitask Learning - Early Stopping - Sparse Representations - Bagging and other Ensemble Methods.
IV	Learning Differs from Pure Optimization - Challenges in Neural Network Optimization - Basic Algorithms - Parameter Initialization Strategies - Algorithms with Adaptive Learning Rates - Approximate Second-order Methods - Optimization Strategies and Meta-Algorithms.
V	The Convolution Operation - Motivation - Pooling - Convolution and Pooling as an Infinitely Strong Prior - Variants of the Basic Convolution Function - Structured Outputs - Data Types - Efficient Convolution Algorithms - Random or Unsupervised features - Convolution Networks and the History of Deep Learning.

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

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14th

Syllabus Revision-New Course

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code/ Name: 224CS2A2DB - Predictive Analytics

Unit	Course Content
I	Introduction to Analytics, Application areas of analytics, challenges and longitudinal view of analytics. Introduction to predictive analytics and data mining: Introduction, Most common data mining applications, Kind of patterns data mining can discover, popular data mining tools.
II	KDD process, CRISP-DM Cross-Industry standard process for data mining, SEMMA. Data and Methods for predictive Analytics: Nature of data in data analytics, Preprocessing of Data for Analytics, Data Mining Methods, Prediction, Classification, Decision Tree, Cluster Analysis for Data Mining, K-Means Clustering Algorithm, Association, Apriori Algorithm, data mining and predictive analytics misconceptions and realities.
III	Naive Bayes, Nearest Neighbor, Similarity Measure-Distance Metric, Artificial Neural Network, Support Vector Machine, Linear and logistic regression, time-series forecasting.
IV	Model Ensembles, Bias variance trade – off in predictive analytics, Imbalanced data problems in predictive analytics, Explain ability of machine learning model for predictive analytics.
V	Fundamental concepts of big data, Business problems that big data Analytics addresses, Big data technologies. Deep learning and Cognitive Computing: Introduction, Elements of Artificial Neural Network, Deep Neural networks, Convolutional Neural Network, cognitive computing.

PERCENTAGE OF SYLLABUS REVISED: 100%

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Syllabus Revision-New Course

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code/ Name: 224CS2A2DC – Advanced Networks

Unit	Course Content
I	The Network Edge: Access Networks - Physical Media -The Network Core :Packet Switching - Circuit Switching- A Network of Networks -Delay, Loss, and Throughput in Packet-Switched Networks-Protocol Layers and their Service Models: Layered Architecture - Encapsulation -Networks under Attack
II	Application Layer: The Web and HTTP- Video Streaming and Content Distribution Networks- Socket Programming: Creating Network Applications- Transport Layer: Connectionless Transport UDP - Principles of Reliable Data Transfer- Connection-Oriented Transport TCP- Principles of Congestion Control-The Network Layer: Routing Algorithms - Intra-AS Routing in the Internet OSPF -Routing Among the ISPs- The SDN Control Plane
III	The Data Link Layer: Error-Detection and -Correction Techniques-Multiple Access Links and Protocols- Data Center Networking- Mobile Networks: WiFi- Cellular Internet Access- Mobility Management: Principles- Mobile IP- Managing Mobility in Cellular Networks- Wireless and Mobility: Impact on Higher-Layer Protocols
IV	Principles of Cryptography - Message Integrity and Digital Signatures- End-Point Authentication- Securing E-Mail- Securing TCP Connections SSL-Network-Layer Security: IPsec and Virtual Private Networks- Securing Wireless LANs- Operational Security: Firewalls and Intrusion Detection Systems
V	Multimedia Networking Applications - Streaming Stored Video- Voice-over-IP- Protocols for Real-Time: RTP - SIP Conversational Applications- Network Support for Multimedia: Dimensioning Best-Effort Networks- Providing Multiple Classes of Service-Diffserv- Per Connection Quality-of-Service Guarantees: Resource Reservation and Call Admission

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

<input checked="" type="checkbox"/>	Skill Development	<input checked="" type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input checked="" type="checkbox"/>	Innovations
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14th

Syllabus Revision - New Course

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code/ Name: 222MT2A2ED - Advanced Operations Research

Unit	Course Content
I	Notations terminology and assumptions - solution to sequencing problems: algorithm of processing n jobs through two machines - algorithm of processing n jobs through three machines - algorithm of processing n jobs through m machines - algorithm of processing 2 jobs through m machines.
II	Failure mechanism of items - considerations leading to replacement - O.R. methodology of solving replacement problems - replacement policy for equipment/asset which deteriorates gradually - replacement of items that fail suddenly.
III	Elementary queuing system - single server queuing model: (M/M/1):(∞/FCFS) - multiple server queuing model: (M/M/k):(∞/FCFS) - multi-phase service queuing model : (M/E _k /1):(∞/FCFS) - benefits and limitations of queuing theory.
IV	Few management applications - ingredients of decision problem - types of decision making environments: decision making under certainty - decision making under risk - decision making under uncertainty - Bayesian decision rule - posterior analysis - decision tree analysis
V	Concepts - goal programming model formulation - concepts of integer programming -some integer programming formulation techniques - concepts of dynamic programming - formulation and solution of dynamic programming problem

PERCENTAGE OF SYLLABUS REVISED: 100%

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Syllabus Revision - New Course

IDC- Biotechnology

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code/ Name: 224CS1A2IB - Python for Biologists

Unit	Course Content
I	Introduction to Digital Computer: Von Neumann concept - Storage - Programming Languages - Translators - Problem Solving Strategies: Problem Analysis - Algorithms - Flow Charts - Introduction to Python: Introduction- Python overview- Comments - Python Identifiers - Reserved keywords - Variables - Standard data types - Operators - Statements and Expressions - String Operations - Boolean Expressions
II	Control Statements: Iteration - The for loop - While statement - if elif else statement - Input from keyboard Functions: Introduction - Built-in functions - Composition of Functions - Type conversion - Type coercion - Date and time - dir() function - help() function - User defined functions - Parameters & arguments - Function calls - The return statement - Python recursive function - Writing Python Scripts
III	Strings: Compound data type - len function - String slices - String traversal - Escape characters - String formatting operator - String formatting functions. Lists - Values and accessing elements - Traversing a list - Deleting elements from list - Built-in list operators - Built-in list methods.
IV	Tuples: Creating tuples - Accessing values in tuples - Tuple assignment - Tuples as return values - Basic tuple operations - Built-in tuple functions - Dictionaries: Creating a dictionary - Accessing values in a dictionary - Updating dictionary - Deleting elements from dictionary - Operations in dictionary - Built-in dictionary methods.
V	Biopython Installation - Biopython Components: Alphabet - Seq - MutableSeq - SeqRecord - Align - AlignIO - ClustalW - SeqIO - AlignIO - BLAST - Biological Related Data - Entrez - PDB - PROSITE - SeqUtils - Sequencing.

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

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BoS

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Syllabus Revision - New Course

IDC- Banking and Insurance

Faculty: Computer Science

Board: Computer Science

Semester: II

Course Code/ Name: 224CS1A2IC - Smart Banking Technologies

Unit	Course Content
I	Boundary less Banking Enabled by Digital Technologies - Overview of DXP - Key Tenets of a DXP - DXP Reference Architecture - Evolution of Digital Platform - Business Drivers for DXP - Overview of Banking Experience Platform – Key tenets – Key Objectives - Three Ps of BXP – KPIs of BXP - Digital Imperatives for Modern Banks.
II	Requirements Gathering: Functional Requirements - Experience Requirements - Multilingual Requirements - Mobility Requirements- Non functional Requirements - Scalability Requirements - Performance Requirements - Maintenance Requirements - Security Requirements - Disaster Recovery Requirements- Accessibility Considerations.
III	Building an Experience Platform - Digital Platform Strategy - Platform Design Phases - Design of Various Layers - Social and Collaboration Design - IoT Integration Design - IoT Case Study - Blockchain Design - Block chain Case Study - Big Data and NoSQL Design - Big Data and NoSQL Case Study
IV	AI Automation Design - Determine Automation Goals -Steps to Build AI Automation Model - Chatbot Case Study-Enterprise Search Engine - Augmented – Virtual Reality Integration - Recent Trends in DevOps.
V	User Interface Design - Key features of DXP UI - User Interface Components - Development Process - Development Life Cycle- Architecture - Evaluating UI frameworks - BXP Case Study - Securing the Banking Experience Platform: DXP Security Framework

PERCENTAGE OF SYLLABUS REVISED: 100%

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DEPARTMENT OF COMPUTER SCIENCE

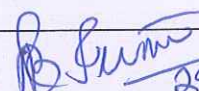
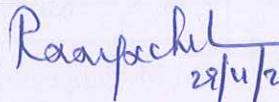
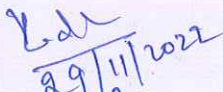

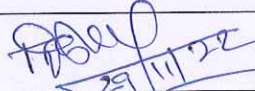


FOURTEENTH BOARD OF STUDIES MEETING

VENUE: A1 Block - Room No. 402

DATE: 29.11.2022

TIME: 10.00 A.M.

The following members were present for the Board of Studies Meeting:

S. No.	NAME	POSITION	SIGNATURE
1	Dr. B. Rosiline Jeetha, Professor and Head	Chairman	 29/11/22
2	Dr. D. Ramya Chitra Associate Professor Department of Computer Science Bharathiar University Coimbatore-641046.	Member (Subject Expert) (Nominated by Vice Chancellor)	 29/11/22
3	Dr. Chandra Blessie E Assistant Professor Department of Artificial Intelligence and Machine Learning Coimbatore Institute of Technology Coimbatore-641046	Member (Subject Expert) (Nominated by Academic Council)	ABSENT
4	Dr. Radhika N Professor School of Computing Amrita Vishwa Vidyapeetham Coimbatore-641112.	Member (Subject Expert) (Nominated by Academic Council)	 29/11/2022 (Dr. N. Radhika)
5	Mr. Kousik Rajendran 1D, Mist Block, Mount Raindrop Apartment Nehru Nagar West, Kalapatti Coimbatore-641048.	Member (Industrial Expert)	 (Kousik Rajendran)
6	Ms. V. Divya Bharathi Transaction Risk Investigator Amazon, Bangalore	Alumni	ABSENT.
7	Part I (Two Semester Language) Dr. N. Kuppuchamy, Tamil Part II (Two Semester Language) Dr. B. Vidyaprabha, English IDC Dr. B. Sowrirajan, Mathematics	Co-Opted Member	 29/11/22  29/11/22  29/11/22

8	Dr.V.Jaiganesh, Professor	Member	<i>Dr. Jm</i>
9	Dr.V.Vinodhini, Professor	Member	<i>V. Vinodhini</i>
10	Dr. M. Savithri , Associate Professor	Member	<i>M. Savithri</i>
11	Dr. J. Ramkumar , Associate Professor	Member	<i>J. Ramkumar</i>
12	Mr. V.S. Jagadeeswaran , Asst. Professor(SG)	Member	<i>V.S. Jagadeeswaran</i>
13	Mr. N. Kumar , Asst. Professor(SG)	Member	<i>N. Kumar</i>
15	Mrs. S. Revathi , Asst. Professor(SG)	Member	<i>S. Revathi</i>
14	Mrs. S. Maheshwari ,Asst. Professor(SG)	Member	<i>S. Maheshwari</i>
15	Mrs. P. Usha , Asst. Professor(SG)	Member	<i>P. Usha</i>
16	Mrs. S. R. Kalaiselvi , Asst. Professor(SG)	Member	<i>S. R. Kalaiselvi</i>
17	Dr. M. Sangeetha , Asst. Professor(SG)	Member	<i>M. Sangeetha</i>
18	Mrs. V. Shobana , Asst. Professor(SG)	Member	<i>V. Shobana</i>
19	Mrs. S. Saranya , Asst. Professor(SG)	Member	<i>S. Saranya</i>

Date: 29/11/22



(Dr. B. Rosiline Jeetha)

BoS Chairman/HoD
Department of Computer Science
Dr. N. G. P. Arts and Science College
Coimbatore - 641 048

B. Rosiline Jeetha
29/11/2022