B.L.D.E. Association's

S. B. ARTS & K. C. P. SCIENCE COLLEGE VIJAYAPUR

Re-accredited at the 'B++' Level by NAAC with 2.99 C.G.P.A in IV Cycle

M.Sc. (CS) Programme

PROGRAM OUTCOME
&
COURSE OUTCOME

PROGRAM OUTCOMES

S.No	Program Outcome	Description
1	PO1:Acquiring fundamental knowledge	Capability to learn basic concepts and methods of various subjects
2	PO2:Building skills on Problem solving techniques and methods	Learning programming languages through pseudo code, algorithm and flowchart, decision making techniques and building logical skills
3	PO3:Demonstration of experimental methods	Acquiring the knowledge by implementing the algorithms using technologies.
4	PO4:Enhancement of skills	Ability to design, develop and integrate the system and application programs through IDE and tools.
5	PO5:Project work	Applying the computer science skills like analysis, design, development testing and deployment to produce to computing based solutions
6	PO6:Presentation and communication skills	Ability to engage independent and lifelong learning in the broadest context.

Class	Subject	Course Outcome	Description
M.Sc-I Sem	Discrete Mathematical Structures 20MSCCS 1.1	CO1: Understanding Sets and logics	Understand the notion of mathematical thinking, mathematical Proofs and to apply them in problem solving.
		CO2: Learning Proofs and functions	Ability to reason logically and to learn about Mathematical Induction, Functions, Diagraph and lattice.
		CO3: Attaining graph theory	Ability to understand graphs& diagraphs, Paths & Cycles, Hamiltonian Cycles.
		CO4: Representation of trees	Ability to understand use of trees, it's significance in Programming Applications.
		CO5: Cogitate the groups and coding	Understand use of groups and codes in Encoding- Decoding and Error detection.
M.Sc-I Sem	Database Management Systems 20MSCCS 1.2	CO1: Envisioning the Data Modelling	Understand the database, abstraction and integration, pros and Cons, Entity Relationship Model.
		CO2: Understand the File Organization.	Explain the basic concept of File organization& storage, operation in files, hashing techniques and also types of indexes.
		CO3: Ruminating the relational Model.	Explain the basic Concept of Relational data Model, database manipulation using SQL, relational Database Design
		CO4: To imbibe the Transaction Processing	Explain the transaction Processing, desirable properties of transaction schedules & recoverability, serializability of schedules concurrency control
		CO5: Understanding the database recovery techniques & algorithms.	Explain the concept of database recovery techniques, ARIES recovery algorithms, database security & authorization.
M.Sc-I Sem	Data structure using C++ 20MSCCS 1.3	CO1: Understanding Basic of Programming Concept & Classes and Objects	Introduce to OOPS Concepts and Development Envoronment, Classes, Union, Struct and Many Functions and Methods
		CO2: Ability to Understand Overloading, Namespace and Inheritance	Introduction to the Concept of OOPs with Examples
		CO3: Ability to Understand Concept of Date and Its Structure.	Concept of Stack and Queues, its types and Application.
		CO4: Ability to Understand Concept of Stack and Queues.	Introduce the concept of data structures through Stack, Queue with Program Implemenation
		CO5: Understanding the concepts of Linked List.	Introduction and Explanation of Linear List, Linked List with imlentation
M.Sc-I Sem	Database Management Systems -Lab 20MSCCSPL 1.4	CO1: Database Schema for a customer-sale scenario	To evaluate DML commands, insert, create, and update
		CO2. Database Schema for a Student Library scenario	To evaluate DDL commands, insert,Alter and drop commands with query within query solving

Class	Subject	Course Outcome	Description
		CO3: Database Schema for a Employee-pay scenario	Appying join operation on multiple tables, inner, outer, left and right outer join operations
		CO4: Database Schema for a Video Library scenario	Learnig Agreagate fucntion on Data base MIN MAX Count, Avg etc
		CO5: Database Schema for a student-Lab scenario	Learnig and executing Views, group by order by and between clauses on all data base relations
M.Sc-I Sem	Data structure using C++ Lab 20MSCCSPL 1.5	CO1:Ability to implement the basics of Data Structure	Select appropriate data structures as applied to specified problem definition
		CO2: An state of arts to implements the various Data structure operations	Implement operations like searching, insertion, and deletion,traversing mechanism etc. on various data structures.
		CO3: Ability to implement on Stack, queues and linked list concepts	Students will be able to implement linear and Non-Linear data structures.
		CO4: Implementation of various Searching and sorting techniques	Implement appropriate Insertion sorting/Linear, Sentinel searching technique for given problem
		CO5: implementation of stack applications using stack methods	Design and implement the Application of stack- Reversing a series, conversion from Decimal to Binary, Postfix evaluation, transformation and others.
		CO6:State of art to implement Menu Drive Operations	To implement the Menu Driven program for Stack, Linked List,queues, trees, and graph other techniques.
		CO7: Understanding the concept of Searching techniques	To implement Different searching techniques like BFS and DFS
M.Sc-I Sem	Computer System Architecture 20MSCSC1.6	CO1: Computer Data Representation	Basic computer data types, Complements, Fixed point representation, Register Transfer and Micro-operations: , Memory-Reference Instructions,
		CO2: Computer Organization and Design	Input output and interrupt, Complete computer description, Design of Basic computer, design of Accumulator Unit
		CO3: Micro programmed Control:	Control Memory, Address sequencing, Micro program Example,design of control Unit
		CO4:Central Processing Unit Introduction	Stack Organization, Instruction format, Addressing Modes, data transfer and manipulation, Program Control, Reduced Instruction Set Computer (RISC)
		CO5: Pipeline And Vector Processing	Flynn's taxonomy, Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction, Pipeline, RISC Pipeline, Vector Processing,Array Processors
M.Sc-II Sem	Programming using Java 20MSCCS 2.1	CO1: Ability to understand the environment of Java programming language	Understand how to design, implement, test, debug, and document programs that use basic data types and computation, simple I/O, conditional and control structures, string handling and functions, arrays, Different type of methods with implementation.

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		CO2: To understand the concepts, principles and demonstrations on different methods and packages.	Discuss the principles of inheritance, interface and packages and demonstrate though problem analysis assignments how they relate to the design of methods, abstract classes and interfaces and Packages.
		CO3: Learning the importance of different Mechanisms	Understand importance of Multi-threading & Different exception handling mechanisms.
		CO4: Ability to understand Frame work Collections with file Operations.	Learn the experience of Frame work collection in java and handling with file operations.
		CO5: Ability to learn the real world Applications with different Techniques.	Understand Java Swings for designing GUI applications, container, layout management Java using applet and AWT that respond to different user events
M.Sc-II Sem	Web Programming 20MSCCS 2.2	CO1: To understand the basics of webpage development.	Understand, analyze and apply the role of languages like HTML, CSS, XML, JavaScript & protocols in the workings of web and it's applications.
		CO2:An ability to learn the concept of PHP and database connectivity.	Creation of server side scripting, Installation of PHP and Using PHP/MYSQL, students will learn about developing web applications.
		CO3:To attain the basics of Ruby programs	To learn about Ruby on Rails, it provides a lot of code, making it quick and simple to create skeletal applications that are both highly customizable and extendable.
		CO4:Deduce the knowledge of JDBC connectivity.	An ability to learn about JDBC implementations, Networking and servelets.
		CO5:Learning the simple concept of AJAX	Understand the basics of AJAX and Rails with AJAX and program implementations.
M.Sc-II Sem	Programming using JAVA Lab 20MSCCSPL 2.3	CO1: Understand the basics	Expertise the basics of programming construct.
		CO2:Ability to learn best programming	Understand the significance of overloading and Overriding.
		CO3:Gaining the knowledge of GUI	Understand the significance of exception handling and exercising the skills of GUI in java.
		CO4: Ability to build Applet Programs	Ability to Build Applet Code for student report read the input using text boxes and display the o/p using buttons.
		CO5: Ability to develop Threading Concepts	Ability to Implement the Concept of Threads and its types.
M.Sc-II Sem	Web Programming -Lab 20MSCCSPL 2.4	CO1: To attain the knowledge of webpage development.	An ability to design WebPages or web documents using XHTML,CSS and JavaScript languages
		CO2:To learn the implementation of PHP programs	An ability to learn PHP Programs and maintain database which will help to develop mini projects.
		CO3:An ability to learn the basics of servelets and jsp	Understand and implement the advanced concepts of JAVA such as Servelets & JSP to create dynamic Web Pages.

Class	Subject	Course Outcome	Description
		CO4:Understand the concept of JDBC and MYSQL.	An ability to maintain database in application usingJDBC and MYSQL.
		CO5: To attain the knowledge of Ruby on rails programs	An ability to develop application software using RUBY on Rails.
M.Sc-II Sem	Data Communication and Computer Networks 20MSCCSPL 2.6	CO1: An ability to learn the basics of a data communications system and network models	Gaining the knowledge of Networks, Internet,OSI and TCP/IPprotocols and addressing
		CO2: Understand the concepts of Data and signal	Deduce the Periodic analog and digital signals, Transmission impairments, digital transmission and transmission modes.
		CO3: Gaining the knowledge of Physical layers and media.	Learning Analog transmission Signal Conversion and Transmission Media
		CO4: Understand the concepts of Switching and telephone networks.	Describing different types of Switching, telephone networks,Modems, Digital Subscriber Line, Cable – tv networks
		CO5: An ability to learn about the various error detection and correction schemes	Getting the knowledge of error detection and correction , Data Link Control and Multiple Access.
M.Sc-III Sem	C# and .NET Programming 20MSCCS 3.1	CO1: Overview of Web page and Properties	Understanding the Overview of Dynamic Web Page, Feature ofASP.NET, Windows Form and its Properties
		CO2: Understanding the Concept of ADO.NET	Ability to Understand the Difference of ADO and ASP, Data Set, Adapted and Also Fundamentals of XML
		CO3: Understanding the Concept of Web Serives	Working with type of Web Services and Caching
		CO4: Understanding Concept of Thread and Security	Ability to understand Threads, Featues of Threads WSDL, Securityand Code Access with Permission.
		CO5: Understandig the C# Programming	Ability to Understand C# Vs JAVA C# Features, Classes, Interface, Controls and Object Delegates, Reflection, VB.NET and Its Features
M.Sc-III Sem	Programming using Python 20MSCCS 3.2	CO1: Introduction and basic applications	Learning to install and working with basic programming concepts, function variable string operations
		CO2: Getting into programming Concepts	Boolean Types , importing Modules, Methods and their types
		CO3: Storing Data in Various Collection	Understanding lists, functions/operations to work on them,looping and conditional statements.
		CO4: Working With File Concepts	File operations, tuples and sets operations, storing data inCollections and accessing, and their comparison.
		CO5: Object oriented in python and GUI applications	Applying class and object in python, Pluggings, Creating GUI Apps, Adding various Widgets, Forms, inserting Shapes
M.Sc-III Sem	C# and .NET Programming -Lab 20MSCCSPL 3.3	CO1: Enumerations programming constructs and encapsulation, polymorphism, and	Create classes, they are reference types in C# and hence are allocated on the heap. Classes provide object
		CO2: Arrays and Strings methods	Entered Year is a Leap Year or Not, single dimensional array, Rectangular arrays
		CO3: Console applications.	addition, subtraction, multiplication and division of two number
		CO4: ASP.Net	Operator overloading. delegates, events, errors and exceptions

Class	Subject	Course Outcome	Description
		CO5: Describe access data source through ADO.NET	Use of different properties in C#, Demonstrate Command line arguments processing, Use of Virtual and override keyword in C#
M.Sc-III Sem	Python Programming -Lab 20MSCCSPL 3.4	CO1: a) Pgm to sum elements from n1 to n2 of +ve intgrs b) Sum of +ve number and –ve numbers in an array	Will learn to pass elements in array with looping statements alongwith function call
		CO2: a) Search an element using binary and linear search b) Implement Insertion sort	Will understand the searching and sorting technique in python
		CO3: a) Stack operation b) evaluate prefix postfix expression	Understanding the stack operation with efficient execution as compared with procedure (compiler) languages in all expression evaluation process.
		CO4: Matrix Multiplication Applying roots of Quadratic Equation	Applying basic quadratic formula to the integers and working with matrix in list collection.
		CO5: String Operation: count no. of vowels, spaces, and pangram sentence and to check palindrome or not.	Execution of all string functions with required operations on word, sentence status.
M.Sc-III Sem	Software Engineering 20MSCSC 3.5	CO1:Introduction to Software Engineering	To understand the nature of Software Engineering, and software life cycle, Process models & also the emergent and non-emergent properties of the software.
		CO2:Gaining the knowledge of requirements System models	Ability to learn about Software Requirements Specification, System Models, Critical systems & formal systems Specification.
		CO3:Understand the significance of Software design	To understand the concept & principles of software design &principles of effective user interface.
		CO4: Ability to understand Software development methods.	Ability to understand Rapid Software Development, reuse of software, Component based software engineering and software evolution.
		CO5:Attain the knowledge of verification , Validation and management.	To know the basics of testing and understanding the concept of software quality management, software cost estimation andsoftware configuration management process.
M.Sc-IV Sem	Digital Image Processing 20MSCCS 4.1	CO1: To understand the Digital Image Fundamentals.	Review the fundamental concepts of a digital imageprocessing system.
		CO2: Ability to learn Image Enhancement in Spatial Domain	Analyze images in the spatial domain using varioustransforms.
		CO3: Ability to understand & learn Image Enhancement in Frequency Domain	Understand the concepts of images in the Frequency domain using various transforms.
		CO4: To attain the Knowledge of image estoration	Evaluate the techniques for image enhancement andimage restoration and color processing.
		CO5: To understand the Concept and techniques of Image Segmentation	Evaluate the techniques for image enhancement and imagesegmentation and morphological processing.

Class	Subject	Course Outcome	Description
M.Sc-IV Sem	Artificial Intelligence 22MSCCS 4.2	CO1: AI Problem Solving techniques	Detailed Introduction to AI and its basic programming, constraints
		CO2: Knowledge and Resonance	Understanding logical Agents and their orders, Real worldapplications and representation
		CO3: Reasoning and Decision making	Understanding the analysis of AI in marketing and decision making technique and their implementation towards the uncertain outcome
		CO4: Learning about Robotics	Reinforcement of robotics and learning how to design andimplement probabilistic models
		CO5: Communicating and perceiving	Understating how to communicate by natural language processingfor the real time implementation of Robotics
M.Sc-IV Sem	Digital Image Processing-Lab using MATLAB /Python 20MSCCSPL 4.3	CO1:.Image Sampling	Program to change the spatial resolution Resize the images testing results using the "lenna" and "peppers" images.
		CO2:Image Quantization	Implement program that would reduce the number of gray levels ina PGM image from 256 to: (i) 128, (ii) 32, (iii) 8, and (iv) 2.
		CO3:Histogram Equalization	To compute the histogram of an image, Implement the histogram equalization technique
		CO3.Histogram Equalization	Implement the histogram specification technique
		CO5. Spatial Filtering (Correlation)	Program to perform spatial filtering (i.e., correlation) of an image,Both the size of the mask and its values (i.e., weights)
M.Sc-IV Sem	Cloud Computing 20MSCCE 4.4	CO1: Cloud Computing Basics:	Understanding Overview, Applications, Intranets and the Cloud,First Movers
		CO2: Organization and Cloud Computing with the Titans:	Applications, Intranets and the Cloud, First Movers, : CloudComputing Services
		CO3: Hardware and Infrastructure: Accessing the Cloud	: Clients, Security, Network, Services, Applications, Web APIs, Web Browsers, Cloud Storage Providers, Standards
		CO4: Software as a Services	Driving Forces, Company Offerings, Industries. Mobile Device Integration, Providers, Microsoft Online. Developing Applications:
		CO5: Local Clouds and Thin Clients	Mobile Device Integration, Providers, Microsoft Online. Developing Applications:
M.Sc-IV Sem	Data Mining Techniques 20MSCSC 4.5	CO1: Learning the basic concept of Data Mining.	Understand the functionality and related technologies of the various data mining techniques, Knowledge representationmethods and its application.
		CO2:Understand the concept of Data warehouse, OLAP and Preprocessing	Appreciate the strengths and limitations of various data mining and data warehousing models, Data Pre- Processing and Datamining Representation
		CO3:Learning the Attribute- Oriented analysis.	Explain the analyzing techniques and algorithms of various data
		CO4: Attaining the knowledge of algorithms with WEKA Tool	Understand different methodologies used in data mining and dataware housing with different algorithms and its prediction.

Class	Subject	Course Outcome	Description
		CO5:The concept of evaluations and Experiments' with techniques	Compare and evaluate different approaches of data ware housingand data mining with experiments, methods and technologies.
M.Sc-IV Sem	Project Work 20MSCPL 4.6	CO1: Review the literature and develop solutions for framed problem statement.	Plan, analyze, design and implement a software project or gather knowledge over the field of research and design or plan about the proposed work.
		CO2: Implement hardware and/or software techniques for identified problems.	Demonstrate the ability to locate and use technical information and hardware requirement from multiple sources.
		CO3: Test and analyze the modules of planned project.	Ability to implement the project, and apply testing methods to different modules.
		CO4: Write technical report and deliver presentation.	Learn to work as a team and to focus on getting a working project done on time with each student being held accountable for theirpart of the project
		CO5: Apply Software Engineering and management principles to achieve project goal.	Learn about and go through the software development cycle with emphasis on different processes - requirements, design, and implementation phases.

Evaluation Mapping -Theory

Evaluation Pattern	20 Marks Internal Assessment Test
	80 Marks University End Examination
Question Paper Pattern:	16 Marks Each, questions of any of these Combinations like
	2, 4,5,6,8,12,16 Marks
	2 Marks(Objective)
	5 Marks(Descriptive)
	4,8,10,12,18 Marks(Numerical/Analytical/Descriptive and Programs)
Parameters of Patterns:	1. Skill Based
	2. Understanding
	3. Logical Ability
	4. Numerical/Analytical
	5. Descriptive/Diagram

Evaluation Mapping

Sl.No	Parameter	Percentage
1	Skill Based	10%
2	Understanding	15%
3	Logical Ability	5%
4	Numerical/Analytical	15%
5	Descriptive/Diagram	20%
6	Programming Skills	35%
		100%

Evaluation Mapping – Practical

Evaluation Pattern:	20 Marks Internal Assessment Test
	80 Marks University End Examination
Writing of Programs :	30 Marks (Each Program carries 15 Marks)
Execution of programs:	30Marks (Each program carries15 marks)
Journal / Laboratory Report:	10Marks Total
Viva-Voce	10Marks Total
Total	80Marks

Evaluation Mapping – Project Work

Evaluation Pattern:	20 Marks Internal Assessment Test	
	80 Marks University End Examination	
Question Paper Pattern:	Dissertation-	35 Marks
	S/W Demo/Presentation :	35 Marks
	Viva – Voce :	10 Marks:
	Total Marks :	80 Marks
Parameters of Patterns	1. Skill Based	
	2. Understanding	
	3. Logical Ability	
	4. Numerical/Analytical	
	5. Descriptive/Diagram	
	6. Programming Skills	

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