Detailed Program

Bachelor of Computer Applications

(BCA)

Semester-V

(2025-2029)

DOC202506200012

RNB GLOBAL UNIVERSITY

Educating stars for tomorrow

RNB GLOBAL UNIVERSITY

RNB Global City, Ganganagar Road,
Bikaner, Rajasthan 334601

OVERVIEW

RNB Global University follows Semester System along with Choice Based Credit System as per latest guidelines of University Grants Commission (UGC). Accordingly, each academic year is divided into two semesters, **Odd (July-December) and Even (January-June).** Also, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy.

The curriculum for BCA Program for (July-December) Odd Semester, 2027 along with examination pattern is as follows:

Course Scheme

Semester –V

S. No	Course Code	Course Category	Course Name	L	T	P	Credits
1.	BCAC14300	DSC 14 (a)	Analysis and Design of Algorithm	3	0	0	3
2.	BCAC14301	DSC 14 (b)	Analysis and Design of Algorithm Lab	0	0	2	1
3.	BCAC14302	DSC 15	Data Warehousing and Data Mining	3	1	0	4
4.	BCAC14352	DSC 16	Cloud Computing	3	0	0	3
6.		DSE 3(a)	One from the Pool of DSE Courses	3	0	0	3
7.		DSE 3(b)	One from the Pool of DSE Courses	0	0	2	1
8.		GE 3	One from the Pool of GE Group - A	3	1	0	4
9	IAPC99349	IAPC -3	**Internship**/apprenticeship / project/ community outreach	0	0	8	4
10.	WHNN99000		Workshops & Seminars/ Human Values & Social Service/NCC/NSS	-	-	-	1
			Total	**15**	**3**	**14**	**25**

DSC – Discipline specific Course
DSE – Discipline Specific Elective
SEC – Skill Enhancement Course
VAC – Value addition course
GE – General Elective

DISCIPLINE SPECIFIC COURSE

Discipline Specific Electives (DSE)						
S.No	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
1.	BCAE14004	PHP & My SQL (DSE 3 (a))	3	0	0	3
2.	BCAE14005	PHP & My SQL lab (DSE 3 (b))	0	0	2	1

ELECTIVES

General Elective Courses (GE)						
S.No.	**Course Code**	**Group A Odd Semester**	**L**	**T**	**P**	**Credits**
1.	BCAC14300	Artificial Intelligence (GE 3)	4	0	0	4

EVALUATION SCHEME- THEORY

The evaluation of the theory paper of BCA would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

Internal Assessment

The distribution of Internal Assessment Marks is as follows:

Type	Details	Marks
Mid Term	One Mid-term Sessional	25
Quiz	Quiz based on MCQs	5
Marks obtained in various Tests, Assignments, Presentations, Tutorials etc.	Average of Marks obtained	15
Academic Performance including Attendance	Eligibility >75% Attendance	5
TOTAL		**50**

External Assessment

Type	Marks
Theory	50

EVALUATION SCHEME -PRACTICAL

The evaluation of the practical paper of BCA would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

Internal Assessment

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Academic Performance including Attendance	Eligibility >75% Attendance	5
TOTAL	**50**	

External Assessment

Type	Marks
Practical	50

EVALUATION SCHEME- WORKSHOPS & SEMINARS AND HUMAN VALUES & SOCIAL SERVICE/NCC/NSS

1. The evaluation of Workshops & Seminar and Human Values & Social Service/NCC/NSS will be completed from Semester I – Semester VI. It will be evaluated internally by the various Forums & Schools Concerned. The credit for this will be given at the end of each Semester.

2. The students have to join club/clubs/Forums with the active participation in different activities of club. The students would be continuously assessed from Semester-I to Semester-IV and credits and marks would be given after the end of each Semester

1. Vision

To create an environment where a holistic education is given in order to ignite an inquisitive mind, inculcate the qualities of excellence, perceive the intricacies of research, seek out obstacles, overcome them, and carve out a niche for oneself.

2. Mission

- Enabling students to maximize their potential and use their professional standards through ethics and education to raise their level of competence and become change agents.
- Fostering a scholarly culture that fosters the phenomenon of giving back to society via research and creative endeavours.
- To integrate partnerships that enhance knowledge in order to create a dynamic intellectual capital.
- To employ emerging technology to create an inclusive learning environment that is integrated with an improved educational process.
- To create a teaching-learning atmosphere that fosters resilience, sensitivity, and critical thinking, ultimately leading to the development of a strong personality.

3. Programme Educational Objectives (PEOs)

PEO1: To facilitate in development of basic fundamentals of Computer Applications that fit as a perfect foundation towards a beginning a professional career in industry.

PEO2: To develop programming skills of students by using fundamental knowledge of computer science

PEO3: To apply new designs and solutions to complex real-life problems using technologies.

PEO4: To play a creative role during professional life through turning problems to opportunities.

4. Program Outcome (POs)

PO1: **Technical understanding:** Solve complicated problems using mathematics, physics, technical foundations, and a specialization in technology.

PO2: **Problem analysis:** Identify, formulate, analyze research materials, and analyse complex engineering problems using foundational principles of mathematics, natural sciences, and sciences to reach justifiable conclusions.

PO3: **Application of modern technologies:** Create, select, and apply appropriate approaches, tools, and advanced engineering and IT tools, such as predictions and modelling, to technically challenging processes while taking into account the constraints.

PO4: **Expert Principles and Cyber Systems:** The ability to use and provide expert principles and cyber systems in a global monetary environment.

PO5: **Ultimate Education:** Determine the demand for and expand the capacity to work as a Computing certified in permanent education.

PO6: **The expert and society:** Apply reasoning informed by contextual information to evaluate societal, health, safety, legal, and cultural issues, as well as the obligations that come with them, in the context of professional engineering activity.

PO7: **Environmental and sustainable development:** Display knowledge of the need for sustainable development by identifying the implications of professional technological solutions in society and the environment contexts.

PO8: **Personality and Cooperative Learning:** Ability to work as a member or manager in a variety of diverse teams.

PO9: **Ethics:** Adhere to professional ethics, duties, and automotive technology norms by adopting ethical ideas.

PO10: **Communication:** Interact well with the technical community and society at large on associated technical activities, such as being able to understand and write effective reports and design documentation, give and receive clear directions.

PO11: **Finance and project management:** Demonstrate knowledge and understanding of technical and professional principles and apply those to one's own work, as a member of the team and leader, to manage projects and in multidisciplinary domains.

PO12: **Life-long learning:** With socio-technological advancements, students will be able to engage in independent and life-long learning.

5. Program Specific Outcome (PSOs)

PSO1: Prepare for a potentially lucrative and employable profession of computer applications.

PSO2: Continue your education in Computer Science/Applications.

PSO3: Work for yourself in the Indian and worldwide software markets.

PSO4: Comply with all applicable industrial standards.

6. Course Outcomes		
Course Codes & Course Names	**After completion of these courses' students should be able to**	
BCAC14300 - Analysis and Design of Algorithm	**CO1:**	Match the principles and tools of systems analysis and design
	CO2:	Classify the application of computing in different context
	CO3:	Identify the professional and ethical responsibilities of practicing the computer professional including understanding the need for quality
	CO4:	Analysis and Design of systems of small sizes
	CO5:	Assess a wide range of problems related to the analysis, design and construction of information systems
BCAC14301 - Analysis and Design of Algorithm Lab	**CO1:**	Recall the various process models
	CO2:	Relate to build software using software development concepts
	CO3:	Apply current techniques, skills, and tools necessary for computing practice
	CO4:	Distinguish various design and development principles in the construction of software systems of varying complexity
	CO5:	Develop importance of the stages in the software life cycle
BCAC14302 - Data Warehousing and Data Mining	**CO1:**	Relate a deeper understanding of database systems and their underlying theory to be able to improve the decision-making process
	CO2:	Interpret the technology of data warehousing
	CO3:	Organize data mining concepts and techniques
	CO4:	Examine different methodologies used in data mining and data ware housing
	CO5:	Estimate the decision-making process
BCAC14352 - Cloud Computing	**CO1:**	Infer the core concepts of the cloud computing paradigm
	CO2:	Apply fundamental concepts in cloud infrastructures to understand the tradeoffs in power, efficiency and cost, and then study how to leverage and manage single and multiple data centers to build and deploy cloud applications that are resilient, elastic and cost-efficient.
	CO3:	Contrast system, network and storage virtualization and outline their role in enabling the cloud computing system model
	CO4:	Illustrate the fundamental concepts of cloud storage and demonstrate their use in storage systems such as Amazon S3 and HDFS

	CO5:	Justify how to leverage and manage single and multipledatacenters
BCAC14304 - Artificial Intelligence	**CO1:**	Familiar basic principles of artificial intelligence
	CO2:	Able to use logic and structured concepts in knowledge representation
	CO3:	To discuss the applications of artificial intelligence
	CO4:	To implement heuristic search algorithms
	CO5:	To design a natural language processor and implement a simple expert system
BCAE14004 - PHP & My SQL	**CO1:**	Explain the differences between typical scripting languages and typical system
	CO2:	Apply your knowledge of the strengths and weaknesses of scripting languages to select an implementation language
	CO3:	Analyze basic PHP syntax for variable use, and standard language constructs, such as conditionals and loops
	CO4:	Construct the syntax and use of PHP object-oriented classes
	CO5:	Assess application programming languages
BCAE14005 - PHP & My SQL Lab	**CO1:**	Define PHP programming language
	CO2:	Demonstrate the basics of PHP object-oriented programming concepts
	CO3:	Build of Array concepts
	CO4:	Create some real time software modules
	CO5:	Create logical based system programs

7. CO PO Mapping

BCAC14300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	2	3	-	3	-	3	-	-	-
CO2	3	-	3	3	2	2	2	3	-	-	2	-
CO3	2	2	2	2	2	3	-	-	3	-	-	3
CO4	-	3	2	-	-	-	-	-	2	-	-	-
CO5	-	3	2	-	3	-	3	3	-	3	3	2

BCAC14301	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	2	-	1	3	-	3	3	-	-
CO2	3	-	3	3	3	2	2	3	-	-	3	-
CO3	2	2	2	2	2	-	3	-	-	-	-	-
CO4	-	3	2	-	1	-	2	-	-	-	-	3
CO5	-	3	-	3	-	3	-	3	3	3	-	-

BCAC14302	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	2	-	1	3	-	3	3	-	-
CO2	3	-	3	3	3	2	-	-	-	-	3	-
CO3	2	2	2	2	2	3	3	1	3	3	-	-
CO4	-	3	2	-	1	-	2	-	-	3	-	3
CO5	3		3	-	3	-	3	-	3	3	-	-

BCAC14352	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	-	2	-	1	3	-	3	-	2	-
CO2	3	-	3	3	3	2	2	3	-	-	-	-
CO3	2	2	3	2	2	3	-	-	3	-	3	-
CO4	1	3	3	-	2	-	2	3	2	-	-	-
CO5	-	3	-	3	-	3	-	3	-	-	-	3

BCAC14304	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	-	-	-	1	3	-	2	1	-	-
CO2	3	-	3	3	3	-	2	1	-	-	-	-
CO3	-	2	3	2	2	3	3	-	-	-	-	-
CO4	1	-	-	-	2	-	2	1	2	2	-	-
CO5	3	-	3	-	3	-	-	2	1	-	-	-

BCAE14005	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	-	2	-	1	3	-	3	-	-	-
CO2	3	-	3	3	3	2	2	3	-	-	-	-
CO3	2	2	3	2	2	3	-	-	-	-	-	-
CO4	1	3	3	-	2	-	-	-	-	-	-	-
CO5	2	-	3	3	2	3	-	3	2	-	-	-

BCAE14004	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	-	3	3	1	2	2	2	-	-	-
CO2	3	3	-	3	3	1	2	-	2	-	2	-
CO3	3	2	2	3	-	-	-	-	-	-	-	3
CO4	3	-	-	-	3	1	2	-	2	-	-	-
CO5	3	-	3	3	3	1	-	3	2	-	-	-

8.Curriculum

Course Name: Analysis and Design of Algorithm

Course Code: BCAC14300

Objectives

To explain the concept of algorithm designing and how these algorithms are analyzed. Discuss so many algorithms with their time complexities and perform a comparison between these algorithms.

Course Outline

Unit I: Introduction
Algorithm, analysis, Time complexity and space complexity, O-notation, Omega notation and Theta notation, Heaps and Heap sort, Sets and disjoint set, union and find algorithms. Sorting in linear time. Heaps and Heap sort Sets and disjoint set, Union and find algorithms. Sorting in linear time, Tower of Hanoi.

Unit II: Divide and Conquer
Divide and Conquer: general method, merge sort, binary search, Recurrences, Solving Recurrences by Substitution method, Recursive Tree Method. **Greedy Method -** General Strategy, Knapsack problem, Job sequencing with Deadlines , Minimum Spanning Trees , Dijkstra's algorithm.

Unit III: Dynamic Programming
Use of table instead of recursion, all pair shortest Path, 0/1 knapsack, Matrix Chain Multiplication, optimal binary search tree, Longest Common Subsequence, Travelling Salesperson Problem.

Unit IV: Backtracking & Problem Classes
8 queens problem, sum of subsets, graph coloring, NP-Hard And NP-Complete Problems**, Basic** concepts, of NP-Hard And NP-Complete Problems (Only concepts should be covered).

Suggested Readings:

1. Bressard, "Fundamental of Algorithm." PHI
2. Horowitz/Sahani, "Fundamentals of computer Algorithms", Galgotia.
3. Magnifying Data Structures, Arpita Gopal : PHI Publications
4. Thomas H Cormen and Charles E.L Leiserson, "Introduction to Algorithm" PHI
5. V. Aho and J.D. Ullman, "Design and Analysis of Algorithms", Addison Wesley

Course Name: Analysis and Design of Algorithm Lab

Course Code: BCAC14301

Objectives

To provide the knowledge of designing of algorithms and how these algorithms are analyzed in a proper way and finding out the time complexity of these algorithms by the help of c++ programs.

Course Outline

1. Implement Recursive Binary search and Linear search and determine the time required to search an element. Repeat the experiment for different values of n, the number of elements in the list to be searched and plot a graph of the time taken versus n.
2. Sort a given set of elements using the Heapsort method and determine the time required to sort the elements. Repeat the experiment for different values of n, the number of elements in the list to be sorted and plot a graph of the time taken versus n.
3. Sort a given set of elements using Merge sort method and determine the time required to sort the elements. Repeat the experiment for different values of n, the number of elements in the list to be sorted and plot a graph of the time taken versus n.
4. Obtain the Topological ordering of vertices in a given digraph.
5. Sort a given set of elements using Quick sort method and determine the time required sort the elements. Repeat the experiment for different values of n, the number of elements in the list to be sorted and plot a graph of the time taken versus n.
6. Find Minimum Cost Spanning Tree of a given undirected graph using Kruskal's algorithm.

Course Name: Data Warehousing and Data Mining

Course Code: BCAC14302

Objectives

- The course addresses growing importance of Programming languages, their uses, and importance of using different programming tools. Course addresses various influences of language design and language implementation techniques like, compilers, interpreters. This course also explains about different expressions and statements used in different programming languages. Comparison of functional programming with logic programming, structure of imperative programming. Exceptions and exception handling procedures of different programming languages like, C++, Java.
- This course is an attempt to provide you with the basic information about data ware house and their development. This course also provides the basic conceptual background necessary to design and develop data ware house applications.

Course Outline

Unit I: Data mining
Introduction, Data mining – on what kind of data, data mining functionalities –what kind of patterns to be mined, Classification of data mining systems, data mining task primitives, integration of a data mining systems with a database or data warehouse systems, major issues in data mining. **Data pre-processing:** Descriptive data summarization, data cleaning, data integration and transformation, data reduction, data descretization and concept hierarchy generation.

Unit II: Data warehouse and OLAP technology
What is data warehouse, A multidimensional data model, data warehouse architecture, data warehouse implementation, data warehouse usage, OLAP, OLAM Mining frequent patterns, association and correlation, efficient and scalable frequent item set mining methods, From association mining to correlation analysis.

Unit III: Classification and prediction
Introduction, issues, classification by decision tree induction, rule based classification, classification by back propagation, lazy learners, other classification methods, Prediction: accuracy and error measures, evaluating the accuracy of a classifier or predictor. **Cluster Analysis:** Types of data in cluster analysis, a categorization of major clustering methods, partitioning methods.

Unit IV: Mining complex types of data

Multidimensional analysis and descriptive mining of complex data objects, mining spatial database, multimedia database, mining world wide web. Applications and trends in data mining: Data mining applications, data mining system products and research prototypes, social impact of data mining, trends in data mining.

Suggested Readings:

1. Kamber and Han, "Data Mining Concepts and Techniques", Hartcourt India P.Ltd.,2001.
2. Paul Raj Poonia, "Fundamentals of Data Warehousing", John Wiley & Sons, 2003.
3. Margaret Dunham, " Data Mining: Introductory and Advanced Topics, 1/e", Pearson.
4. G. K. Gupta, "Introduction to Data Mining with Case Studies", PHI, 2006.
5. W. H. Inmon, "Building the Operational Data Store",2nd Ed., John Wiley, 1999.
6. B. M. Shawkat Ali, Saleh A. Wasimi, "Data Mining Methods and Techniques", Cengage Learning, 2009.

Course Name: Cloud Computing

Course Code: BCAC14352

Objectives

1. To provide students with the fundamentals, essentials of Cloud Computing and cloud models.
2. To be able to work with cloud services and to provide a sound foundation of the Cloud Computing so that they are able to start using and adopting Cloud Computing services and tools in their real life scenarios.
3. To learn about the cloud environment, building software systems and components that scale to millions of users in modern internet.
4. To understand basic and advance services provide by the cloud and basic architecture on which cloud is based upon.
5. To enable students exploring some important cloud computing driven commercial systems such as Google Apps, Microsoft Azure and Amazon Web Services and other businesses cloud applications.

Course Outline

Unit I: Introduction

The vision of cloud computing - The cloud computing reference model - Characteristics and benefits - Challenges ahead - Historical developments - Distributed systems - Virtualization - Building cloud computing environments - Application development - Infrastructure and system development - Computing platforms and technologies

Unit II: Principles of Parallel and Distributed Computing

Parallel vs. distributed computing - Elements of parallel computing - Hardware architectures for parallel processing Approaches to parallel programming - Laws of Caution **Cloud Computing Architecture** Introduction - The cloud reference model - Types of clouds -

Economics of the cloud.

Unit III: Virtualization
Introduction - Characteristics of virtualized environments - Taxonomy of virtualization techniques - Virtualization and cloud computing - Pros and cons of virtualization - Technology example: VMware: full virtualization.

Cloud Computing Economics Cloud infrastructure - Economics of private clouds - Software productivity in the cloud - Economies of scale: public vs. private clouds.

Unit IV: Cloud Platforms in Industry
Amazon web services: Compute services - Storage services - Communication services - Additional services. Google App Engine: Architecture and core concepts - Application life cycle - Cost model – Observations. Microsoft azure: Azure core concepts - SQL azure - Windows azure platform appliance

Unit V: Cloud Applications
Healthcare: ECG analysis in the cloud - Biology: protein structure prediction - Biology: gene expression data analysis for cancer diagnosis - Geoscience: satellite image processing

Suggested Readings:

1. Rajkumar Buyya, Christian Vecchiola and S. Thamarai Selvi, "Mastering Cloud Computing" - Foundations and Applications Programming , MK publications, 2013.
2. Gautam Shroff, "Enterprise Cloud Computing:Technology, Architecture,Applications" by Cambridge University Press, 2010.
3. Michael J.Kavis, "Architecting the Cloud: Design Decisions for Cloud ComputingService Models (SaaS, PaaS, and IaaS)", John Wiley & Sons Inc., Jan 2014

Course Name: Artificial Intelligence

Course Code: GEC066010

Objective:

- To explain the basic principles of artificial intelligence;
- To apply logic and structured concepts in knowledge representation;
- To discuss the applications of artificial intelligence;
- To implement heuristic search algorithms;
- To design a natural language processor and implement a simple expert system.

Unit I
Introduction- What is intelligence? Foundations of artificial intelligence (AI), Task of artificial intelligence, Techniques of artificial intelligence, Problem Solving, Formulating problems, problem types, states and operators, state space, Expert system and its components.

Unit II

Uninformed Search Strategies- Breath First Search, Depth First Search, Depth Limited Search, Informed Search Strategies- Heuristic Functions, Best First Search, Hill Climbing Algorithm, Problems and solutions of Hill Climbing, Iterative Deepening (IDA), A* algorithm, AO* Algorithm.

Unit III

Game playing- Introduction, Types of games, Minimax game algorithm, Alpha Beta cut-off procedure. Knowledge Representation- Role of Knowledge, Declarative Knowledge, Procedural Knowledge, Knowledge representation.

Unit IV

Logics- propositional logics, First Order Predicate Logics (FOPL), Syntax of First Order Predicate Logics, Properties of Wff, Clausal Forms, Conversion to clausal forms.

Unit V

Planning- Introduction, Basic representation of plans, partial order planning, planning in the blocks world, Goal Stack Planning, Non-linear planning using constraint posting (TWEAK method).

Course Name: PHP & My SQL

Course Code: BCAE14004

Objectives

- The Course Divide in two parts: first one is PHP and Second is Mysql. PHP Covers following topics: Basic concepts of programming, Development Concept, Control Structure, Looping Structure, Function, File Inclusion, Working with Forms, Array, String Functions, Working with File Handling, OOPs concepts in php, Session, Cookies, Error Handling. and in second part

- Mysql: About Database forms, Working with MYSQL Admin, MySQL Function in PHP Database Connections, Query on tables, SQL Queries Create Database & Table Drop Database & Table Insert Record Select Record Deleting Record Modifying Record WHERE Clause Using Operators Sorting Records Eliminating Duplicates Grouping Records, Having Clause Joining Tables Sub queries Using Table And Column Aliases.

Course Outline

Unit-I

Introduction to PHP: What is PHP How PHP better than other Benefits Of Using PHP MYSQL Server Client Environment Web Browse Web Server Installation & Configuration Files.
Development Concept: How PHP Script Work PHP Syntax Write your First PHP Program Embed PHP In HTML/HTML In PHP PHP Data Type Variable In PHP Contents In PHP Operator In PHP.
Control Structure: If Statement If.....Else Statement If...If Else Statement Nested If Statement

Switch Statement
Looping Structure: For Loop While Loop Do...While Loop For each Loop
Function: What is function Syntax User Defined Function System Defined Function Parameterized Function Parameterized Function Date & Time Function Hash Function Mail Function
File Inclusion: Include () Require()
Working with Forms What is a Form? Important HTML Tags Super-Global Variable , Different ways to carry form data (GET, POST), isset(), is empty()

Unit II
Array: What is Array Syntax Associative Array Numeric Array Multi-Dimensional Array
String Function Chr() strlen() strpos() strcmp()
Working with File Opening File Reading File Writing File Closing File Appending File Uploading File
OOPs Concept Class & Object Access Modifier Properties of Object Encapsulation and abstraction Inheritance Polymorphism Function overriding Abstract class.
State Management Creating Cookies Set Cookies Destroying Cookies Creating Session Set Session Destroying Session
Error Handling & Exception Introduction to Error Try, catch, throw Block Handling.

Unit III
Introduction to MYSQL What is Database? Understanding an RDBMS Understanding Tables, Record & Fields SQL Language.
Working with MYSQL Admin Working with PHP My Admin Types Data Type Creating Database & Tables Dropping Database & Tables Adding Fields Selecting Table Alerting Fields Properties.
MySQL Function in PHP Database Connections Managing Database Connections Performing Queries Closing Connection.

Unit IV
SQL Queries Create Database & Table Drop Database & Table Insert Record Select Record Deleting Record Modifying Record WHERE Clause Using Operators Sorting Records Eliminating Duplicates Grouping Records, Having Clause Joining Tables Sub queries Using Table And Column Aliases

Suggested Readings:

1. PHP and MySQL Web Development All-in-One Desk Reference for Dummies, Janet Valade with Tricia Ballad, Bill Ballad, Willey 2008.

2. PHP and MySQL Web Development (Developer's Library) Kindle Edition, by Luke Welling, Laura Thomson, Sams Publishing.

Course Name: PHP & My SQL Lab

Course Code: BCAE14005

Objectives

PHP & MYSQL Lab course cover all the practical part of basic or advance programming in php and number of query like create database/table, drop database/table, insert/delete, update data from table, create and remove session/cookie, use basic component of form and string functions etc.

Course Outline

1. Create a php webpage and print "hello world".
2. Create a php program to find odd or even number from given number.
3. Write a php program to find maximum among three numbers.
4. Write a PHP program to swap two numbers.
5. Write a PHP Program to demonstrate the variable function:
   a. Gettype()
   b. Settype()
6. Write a PHP Program to demonstrate the variable unction
   a. isset()
   b. unset()
7. Give the example of variable function:
   a. strval()
   b. floatval()
   c. intval()
   d. print_r()
   e. var_dump()
8. Give the example of string function
   a. substr()
   b. substr()
   c. strcmp()
   d. strcasecmp()
   e. strpos()
   f. strpos()

9. Write a PHP program that demonstrate form element (input elements).
10. Write a PHP program that demonstrate passing variable using URL.
    i. Write a PHP program that demonstrate use of session:1
    ii. Write a PHP program that demonstrate use of session:2
11. Write a program that demonstrate use of cookies: 1
12. Write a program that demonstrate use of cookies: 2
13. Write a PHP program to create a database using MySQL
14. Write a PHP program to drop a database using MySQL.
15. Write a PHP program to create a table in MySQL.
16. Write a PHP program to insert record into a table using MySQL.
17. Write a PHP program to drop table using MySQL.
18. Write a program to update table:6
19. Write a PHP program to select data and show into table format
20. Create a student Registration in PHP and Save and Display the student Records.
21. Write a program to Develop student registration form and display all the submitted data on another page.

9.Lesson Plans

BCAC14300– Analysis and Design of Algorithm

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Basic of Algorithm Analysis & Design, Algorithm Design Techniques	C-1	Lecture
Unit-I	Order arithmetic, time and space complexity, Stack & Queues	C-2	Lecture
Unit-I	Heaps & Heap Sort, Sets and Disjoint Set	C-3	Lecture
Unit-I	Union & Find Algorithms	C-4	Lecture
Unit-I	Sorting in linear time	C-5	Lecture
Unit-I	Tower of Hanoi	C-6	Lecture
	Clarification Class	C-7	Clarification Class
Unit-II	Divide & Conquer: General Method	C-8	Lecture
Unit-II	Merge Sort	C-9	Lecture
Unit-II	Solving Recurrences by substitution method	C-10	Lecture
Unit-II	Recursive Tree Method.	C11	Lecture
	Home Assignment		Home Assignments
	Presentation	C-12	Presentation
Unit-II	Greedy Method: General Strategy	C-13	Lecture
Unit-II	Job Sequencing with Deadlines	C-14	Lecture
Unit-II	Job Sequencing with Deadlines	C-15	Lecture
Unit-II	Guest Lecture	C-16	Guest lecture
Unit-II	Knapsack problem	C-17	Lecture
Unit-II	Activity	C-18	Activity
Unit-II	Knapsack problem	C-19	Lecture
Unit-II	Class Room Assignment	C-20	Class Room Assignment
Unit-II	Dijkstra Algorithm	C-21	Lecture
Unit-II	Dijkstra Algorithm	C-22	Lecture
Unit-II	Minimum spanning trees	C-23	Lecture
Unit-II	Minimum spanning trees	C-24	Lecture
	Activity		Activity
	Clarification Class	C-25	Clarification Class
	Class Room Assignment		Class Room Assignment
Unit-III	Dynamic Programming	C-26	Lecture
Unit-III	Use of table instead of recursion	C-27	Lecture
Unit-III	All pair shortest Path	C-28	Lecture
Unit-III	Presentation		Presentation
Unit-III	0/1 knapsack	C-29	Lecture
Unit-III	Webinar	C-30	Webinar
Unit-III	Matrix Chain Multiplication	C-31	Lecture
Unit-III	Class Room Assignment	C-32	Class Room Assignment
Unit-III	Optimal binary search tree	C-33	Lecture

Unit-III	Longest Common Subsequence	C-34	Lecture
Unit-III	Traveling salesperson problem	C-35	Lecture
Unit-III	Clarification Class	C-36	Clarification Class
Unit-III	Presentation		Presentation
Unit-III	Home Assignment		Take Home Assignments
Unit-IV	Backtracking & Problem Clauses	C-37	Lecture
Unit-IV	Backtracking: 8 queens' problem	C-38	Lecture
Unit-IV	graph colouring	C-39	Lecture
Unit-IV	sum of subset	C-40	Lecture
Unit-IV	Class Room Assignment	C-41	Class Room Assignment
Unit-IV	sum of subset	C-42	Lecture
Unit-IV	P, NP	C-43	Lecture
Unit-IV	NP- Hard	C-44	Lecture
	Clarification Class	C-45	Clarification Class

BCAC14301 – Analysis and Design of Algorithm Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Linear Search & Its Time Complexity Computation.	P-1,2	Practical
2	Binary Search & Its Time Complexity Computation.	P-3,4	Practical
3	Insertion Sort & Its Time Complexity Computation	P-5,6	Practical
4	Merge Sort & Its Time Complexity Computation	P-7,8	Practical
5	Merge Sort & Its Time Complexity Computation	P-9,10	Practical
6	Quick Sort & Its Time Complexity Computation	P-11,12	Practical
7	Quick Sort & Its Time Complexity Computation	P-13,14	Practical
8	Topological ordering of vertices in a given graph	P-15,16	Practical
9	Topological ordering of vertices in a given graph	P-17,18	Practical
10	Heap Sort & Its Time Complexity Computation	P-19,20	Practical
11	Heap Sort & Its Time Complexity Computation	P-21,22	Practical
12	Minimum cost spanning tree	P-23,24	Practical
13	Clarification Class	P-25,26	Clarification Class
14	Activity	P-27,28	Activity
15	Clarification Class	P-29,30	Clarification Class

BCAC14302 – Data Warehousing and Data Mining

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Data Mining, Introduction of Syllabus, Introduction of Data Mining, what kind data to be mined, Data Mining Functionalities	C-1	Lecture
Unit-I	Classification of Data Mining System, Data Mining Task	C-2	Lecture
Unit-I	Major issues in Data Mining System, Descriptive Data pre processing	C-3	Lecture
Unit-I	Knowledge Discovery in Data Mining	C-4	Lecture
Unit-I	Home Assignment		Take Home Assignments
Unit-I	Data Cleaning, Data Integration, Data Transformation and Hierarchy concept generation	C-5	Lecture
Unit-I	Class Assignment	C-6	Class Room Assignment
Unit-II	Data Warehouse and Olap Technology	C-7	Lecture
Unit-II	What is Data Warehouse, Multi-dimensional Analysis, Warehouse Architecture, data warehouse implementation, Usage	C-8	Lecture
Unit-II	OLAP Data Mining Pattern	C-9	Lecture
Unit-II	OLAM Data Mining Pattern	C-10	Lecture
Unit-II	Presentation	C-11	Presentation
Unit-II	Association and Corelations, Efficient and Scable Pattern	C-12	Lecture
Unit-II	From Association Mining to Correlation Analysis	C-13	Lecture
Unit-II	Home Assignment		Take Home Assignments
Unit-II	Classification and Prediction	C-14	Lecture
Unit-III	Introduction, Issues, Classification, why we needed classification	C-15	Lecture
Unit-III	Classification by Decision Tree	C-16	Lecture
Unit-III	Rule Based Classification	C-17	Lecture
Unit-III	Class Room Assignment	C-18	Class Room Assignment
Unit-III	Classification Class	C-19	Classification Class
Unit-III	Home Assignment		Take Home Assignments
Unit-III	Other Classification Methods	C-20	Lecture
Unit-III	Predication, Error and Accuracy Measures	C-21	Lecture
Unit-III	Evaluating the accuracy of Predictor	C-22	Lecture
Unit-III	Cluster Analysis, Types of Data in Cluster Analysis	C-23	Lecture
Unit-III	Presentation	C-24	Presentation

Unit-III	Major Clustering Methods	C-25	Lecture
Unit-III	Portioning Methods	C-26	Lecture
Unit-III	Class room Assignment	C-27	Class Room Assignment
Unit-III	Clarification Class	C-28	Clarification Class
Unit-IV	Mining Complex Types of Data	C-29	Lecture
Unit-IV	Multidimensional Analysis and descriptive Mining of Complex data	C-30	Lecture
Unit-IV	Mining Spatial Database	C-31	Lecture
Unit-IV	Multimedia Database	C-32	Lecture
Unit-IV	Seminar	C-33	Seminar
Unit-IV	Mining World Wide web	C-34	Lecture
Unit-IV	Application and Trends in Data Mining	C-35	Lecture
Unit-IV	Data Mining Applications	C-36	Lecture
Unit-IV	Data Mining Applications	C-37	Lecture
Unit-IV	Data Mining System Products	C-38	Lecture
Unit-IV	Research Prototypes	C-39	Lecture
Unit-IV	Guest Lecture	C-40	Guest lecture
Unit-IV	Activity	C-41	Activity
Unit-IV	Social Impacts on Data Mining	C-42	Lecture
Unit-IV	Trends in Data Mining	C-43	Lecture
Unit-IV	Trends in Data Mining	C-44	Lecture
	Clarification Class	C-45	Clarification Class

BCAC14352 – Cloud Computing

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to Cloud Computing, The vision of cloud computing	C-1	Lecture
Unit-I	The cloud computing reference model	C-2	Lecture
Unit-I	Characteristics and benefits - Challenges ahead - Historical developments	C-3	Lecture
Unit-I	Distributed systems - Virtualization, Building cloud computing environments	C-4	Lecture
Unit-I	Application development - Infrastructure and system development	C-5	Lecture
Unit-I	Computing platforms and technologies	C-6	Lecture
	Clarification Class	C-7	Clarification Class
	Class Room Assignment	C-8	Class Room Assignment
	Presentation	C-9	Presentation
Unit-II	Principles of Parallel and Distributed Computing	C-10	Lecture
Unit-II	Parallel vs. distributed computing -	C-10	Lecture
Unit-II	Elements of parallel computing-Hardware architectures for parallel processing	C-11	Lecture
Unit-II	Approaches to parallel programming-Laws of Caution	C-12	Lecture
Unit-II	Cloud Computing Architecture Introduction	C-13	Lecture
Unit-II	The cloud reference model - Types of clouds - Economics of the cloud.	C-14	Lecture
Unit-II	Clarification Class	C-15	Clarification Class
Unit-II	Class Room Assignment	C-16	Class Room Assignment
Unit-II	Presentation	C-17	Presentation
Unit-II	Guest lecture	C-18	Guest lecture
	Take Home Assignments		Take Home Assignments
Unit-III	Virtualization	C-19	Lecture
Unit-III	Introduction - Characteristics of virtualized environments	C-19	Lecture
Unit-III	Virtualization and cloud computing - Taxonomy of virtualization techniques	C-20	Lecture
Unit-III	Pros and cons of virtualization Technology example: VMware: full virtualization	C-21	Lecture
Unit-III	Cloud Computing Economics Cloud infrastructure - Economics of private clouds	C-22	Lecture
Unit-III	Software productivity in the cloud -	C-23	Lecture
Unit-III	Economies of scale: public vs. private clouds.	C-24	Lecture
	Clarification Class 3	C-25	Clarification Class
	Class Room Assignment	C-26	Class Room

			Assignment
	Quiz	C-27	Quiz
	Seminar	C-28	Seminar
	Take Home Assignments		Take Home Assignments
Unit-IV	Cloud Platforms in Industry	C-29	Lecture
Unit-IV	Amazon web services: Compute services - Storage services	C-29	Lecture
Unit-IV	Communication services - Additional services	C-30	Lecture
Unit-IV	Google App Engine: Overview -Architecture and core concepts	C-31	Lecture
Unit-IV	Application life cycle - Cost model – Observations	C-32	Lecture
Unit-IV	Microsoft azure: Azure core concepts	C-33	Lecture
Unit-IV	SQL azure - Windows azure platform appliance	C-34	Lecture
	Clarification Class	C-35	Clarification Class
	Class Room Assignment	C-36	Class Room Assignment
	Quiz		Quiz
Unit-V	Cloud Applications	C-37	Lecture
Unit-V	Cloud Applications Overview	C-38	Lecture
Unit-V	Healthcare: ECG analysis in the cloud	C-39	Lecture
Unit-V	Biology: protein structure prediction	C-40	Lecture
Unit-V	Biology: gene expression data analysis	C-41	Lecture
Unit-V	Geoscience: satellite image processing	C-42	Lecture
	Clarification Class	C-43	Clarification Class
	Webinar	C-44	Webinar
	Presentation	C-45	Presentation

GEC066010 – Artificial Intelligence

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction- What is intelligence?	C-1	Lecture
Unit-I	Foundations of artificial intelligence (AI)	C-2	Lecture
Unit-I	Task of artificial intelligence,	C-3	Lecture
Unit-I	Techniques of artificial intelligence	C-4	Lecture
Unit-I	Problem Solving	C-5	Lecture
Unit-I	Formulating problems	C-6	Lecture
Unit-I	problem types	C-7	Lecture
Unit-I	states and operators	C-8	Lecture
Unit-I	state space	C-9,10	Lecture
Unit-I	Expert system and its components	C-11	Lecture
	Clarification Class	C-13	Clarification Class
Unit-II	Uninformed Search Strategies	C-14	Lecture
Unit-II	Breath First Search	C-15	Lecture
Unit-II	Depth First Search, Depth Limited Search	C-16,17	Lecture
Unit-II	Informed Search Strategies- Heuristic Functions	C-18,19	Lecture
Unit-II	Best First Search	C-20	Lecture
Unit-II	Hill Climbing Algorithm	C-21	Lecture
Unit-II	Problems and solutions of Hill Climbing	C-22 ,23	Lecture
Unit-II	Iterative Deepening (IDA)	C-24	Lecture
Unit-II	A* algorithm	C-25	Lecture
Unit-II	AO* Algorithm	C-26	Lecture
Unit-II	Clarification class	C-27	Clarification Class
	Classroom Assignment	C-28	Classroom Assignment
Unit -III	Game playing- Introduction	C-29	Lecture
Unit -III	Types of games, Minimax game algorithm	C-30,31	Lecture
Unit -III	Alpha Beta cut-off procedure	C-32	Lecture
Unit -III	Knowledge Representation- Role of Knowledge	C-33 ,34	Lecture
Unit -III	Declarative Knowledge, Procedural Knowledge, Knowledge representation	C-35, C37	Lecture
Unit -III	Clarification Class	C-38	Lecture
	Classroom Assignment	C-39	Lecture
	Activity	C40	Activity
Unit - IV	Logics- propositional logics	C41 – C42	Lecture
Unit - IV	First Order Predicate Logics (FOPL)	C43 – C44	Lecture
Unit - IV	Syntax of First Order Predicate Logics	C-45	Lecture
Unit - IV	Properties of Wff	C-46	Lecture
Unit - IV	Clausal Forms	C-47	Lecture
Unit - IV	Conversion to clausal forms	C-48	Lecture
Unit - IV	Clarification class	C-49	Clarification class
Unit – V	Planning- Introduction	C-50	Lecture
Unit – V	Basic representation of plans	C-51,52	Lecture
Unit – V	partial order planning	C-53,54	Lecture

Unit – V	planning in the blocks world	C-55, 56	Lecture
Unit – V	Goal Stack Planning, Non-linear planning using constraint posting (TWEAK method).	C-57, C58	Lecture
Unit – V	Clarification Class	C-59	Clarification Class
Unit – V	Activity	C-60	Activity

BCAE14004– PHP & My SQL

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to PHP: What is PHP How PHP better than other Benefits Of Using PHP MYSQL Server Client Environment	C-1	Lecture
Unit-I	Web Browse Web Server Installation & Configuration Files.	C-2	Lecture
Unit-I	Development Concept: How PHP Script Work PHP Syntax Write your First PHP Program Embed PHP In HTML/HTML In PHP	C-3	Lecture
Unit-I	PHP Data Type Variable In PHP Contents In PHP Operator In PHP	C-4	Lecture
Unit-I	PHP Data Type Variable In PHP Contents In PHP Operator In PHP	C-5	Lecture
Unit-I	Control Structure, Looping, Switch Statement	C-6	Lecture
Unit-I	Function: User-defined, Pre-defined, Array: Indexed, Associative, Multidimensional	C-7	Lecture
Unit-I	Date Time, Mail Function, Hash functions, Include(), Required(), Super-Global Variables, isset(), is empty() functions	C-8	Lecture
	Clarification Class	C-9	Clarification Class
	Class Room Assignment	C-10	Class Room Assignment
	Presentation	C-11	Presentation
Unit-II	Array: What is Array Syntax Associative Array Numeric Array Multi-Dimensional Array	C-12	Lecture
Unit-II	String Function Chr() strlen() strpos() strcmp()	C-13	Lecture
Unit-II	Working with File Opening File Reading File Writing File Closing File, Appending File Uploading File	C-14	Lecture
Unit-II	OOPs Concept Class & Object Access Modifier Properties of Object Encapsulation and abstraction	C-15	Lecture
Unit-II	Inheritance Polymorphism, Function overriding Abstract class	C-16	Lecture
Unit-II	State Management Creating Cookies Set Cookies	C-17	Lecture
Unit-II	Destroying Cookies Creating Session Set Session Destroying Session	C-18	Lecture
Unit-II	Error Handling & Exception Introduction to Error	C-19	Lecture
Unit-II	Try, catch, throw Block Handling	C-20	Lecture

Unit-II	Clarification Class	C-21	Clarification Class
	Class Room Assignment	C-22	Class Room Assignment
	Presentation	C-23	Presentation
	Quiz	C-24	Quiz
Unit-III	Introduction to MYSQL What is Database? Understanding an RDBMS Understanding Tables, Record & Fields SQL Language	C-27	Lecture
Unit-III	Working with MYSQL Admin Working with PHP My Admin Types Data Type -	C-28	Lecture
Unit-III	Creating Database & Tables Dropping	C-29	Lecture
Unit-III	Database & Tables Adding Fields Selecting Table Alerting Fields Properties	C-30	Lecture
Unit-III	MySQL Function in PHP Database	C-31	Lecture
Unit-III	Connections Managing Database	C-32	Lecture
Unit-III	Connections Performing Queries Closing Connection	C-33	Lecture
	Clarification Class	C-34	Clarification Class
	Class Room Assignment	C-35	Class Room Assignment
	Presentation	C-36	Presentation
	Take Home Assignments		Take Home Assignments
Unit-IV	SQL Queries Create Database & Table Drop Database & Table Insert Record Select Record Deleting Record Modifying Record WHERE Clause Using Operators Sorting Records	C-37	Lecture
Unit-IV	Eliminating Duplicates Grouping Records, Having Clause Joining Tables Subqueries Using Table And Column Aliases	C-38	Lecture
Unit-IV	SQL Queries Create Database & Table Drop Database & Table Insert Record Select Record Deleting Record Modifying Record WHERE Clause Using Operators Sorting Records Eliminating Duplicates Grouping Records, Having Clause Joining Tables Subqueries Using Table And Column Aliases	C-39	Lecture
Unit-IV	SQL Queries Create Database & Table Drop Database & Table Insert Record Select Record Deleting Record Modifying Record WHERE Clause Using Operators Sorting Records Eliminating Duplicates Grouping Records, Having Clause Joining Tables Subqueries Using Table And Column Aliases	C-40	Lecture
Unit-IV	SQL Queries Create Database & Table Drop Database & Table Insert Record Select Record Deleting Record Modifying Record	C-41	Lecture

Unit-IV	WHERE Clause Using Operators Sorting Records Eliminating Duplicates Grouping Records, Having Clause Joining Tables Subqueries Using Table And Column Aliases	C-42	Lecture
	Clarification Class	C-43	Clarification Class
	Class Room Assignment	C-44	Class Room Assignment
	Presentation	C-45	Presentation

BCAE14005– PHP & My SQL Lab

S.No.	Particulars	Class No.	Pedagogy of Class
1	Create a Php webpage and print "hello world" Create a Php program to find odd or even number from given number.	P-1,2	Practical
2	Write a PHP program to swap two numbers. Write a PHP Program to demonstrate the variable function: a. Gettype() b. Settype ()	P-3,4	Practical
3	Write a PHP Program to demonstrate the variable function a. isset (), b. unset () Give the example of variable function: a. strval () b. floatval() c. intval() d. print_r() e. var_dump()	P-5,6	Practical
4	Give the example of string function a. substr() b. substr() c. strcmp() d. strcasecmp() e. strpos() f. strpos() Write a PHP program that demonstrate form element (input elements).	P-7,8	Practical
5	Write a PHP program that demonstrate passing variable using URL. i. Write a PHP program that demonstrate use of session:1 ii. Write a PHP program that demonstrate use of session: Write a program that demonstrate use of cookies: Write a program that demonstrate use of cookies:	P-9,10	Practical
6	Write a PHP program to create a database using MySQL Write a PHP program to drop a database using MySQL.	P-11,12	Practical
7	Write a PHP program to create a table in MySQL. Write a PHP program to insert record into a table using MySQL.	P-13,14	Practical
8	Write a PHP program to drop table using	P-15,16	Practical

	MySQL.		
9	Write a program to update table:6	P-17,18	Practical
10	Write a PHP program to select data and show into table format	P-19,20	Practical
11	Create a student Registration in PHP and Save and Display the student Records.	P-21,22	Practical
12	Write a program to Develop student registration form and display all the submitted data on another page.	P-23,24	Practical
13	Presentation	P-25,26	Presentation
14	Clarification Class	P-27,28	Clarification Class
15	Quiz	P-29,30	Quiz

Note: The review of Syllabus happens on periodic basis for the benefit of the students. In case there are changes in curriculum due to review, students would be intimated in writing.

---------- End of document----------