Structure & Syllabus for Semester-II

BACHELOR OF COMPUTER APPLICATIONS (BCA) Programme

Gujarat University

2023 – 2024

As per NEP 2020 CURRICULUM AND CREDIT FRAMEWORK FOR UNDERGRADUATE PROGRAMMES, UGC

&

Resolution No. KCG/admin/2023-24/0607/kh.1

of

Education Department, Govt. of Gujarat

STRUCTURE FOR SEMESTER - 2
GUJARAT UNIVERSITY
Bachelor Of Computer Applications (B.C.A.)
(as per NEP 2020)

COURSE:	Bachelor Of Computer Applications (B.C.A.)
MAJOR:	COMPUTER APPLICATIONS
MINOR:	1. COGNITIVE MATHS
	2. DATA SECURITY
	3. WEB TECHNOLOGIES

SEMESTER - 2

MAJOR

CODE	COURSE	CREDITS
DSC-C-BCA-121T	Data Structures Using C	4
DSC-C-BCA-122P	Data Structures Using C Practical	4

MINOR

CODE	COURSE	CREDITS
DSC-M-BCA-123T	Statistical Methods	2
DSC-M-BCA-123P	Applications of Statistical Methods	2
	OR	
DSC-M-BCA-123T	Cryptography	2
DSC-M-BCA-123P	Cryptography Using C	2
	OR	
DSC-M-BCA-123T	Advanced Web Technologies	2
DSC-M-BCA-123P	Applications of Dynamic Web Technologies	2

INTER DISCIPLINARY / MULTI DISCIPLINARY
(1 Theory and 1 Practical Course has to be chosen. Courses can be chosen from Basket)

CODE	COURSE	CREDITS
IDC-BCA-124P	Working with Data Using MySQL	2
IDC-BCA-124T	Data Management software for Business	2
IDC-BCA-124P	Business Data Analytics using Spreadsheets	2

ABILITY ENHANCEMENT COURSE ()

AEC-BCA-125	(Any ONE Course to be selected from the Basket)	**2**

SKILL ENHANCEMENT COURSE
(Any ONE Course. Course can also be chosen from Basket)

SEC-BCA-126	Business Enhancement Using WordPress	**2**

COMMON VALUE ADDED COURSES

VAC-BCA-127	(Any ONE Course to be selected from the Basket)	**2**

TOTAL CREDITS	**22**

Semester - II

Bachelor of Computer Applications

MULTIDISCIPLINARY COURSES

Course Name: Working with Data using MySQL

Course Code: IDC-BCA-124 P

Credits: 2

Course Outcomes:
The aim of this course is to enable students to
- Work with database applications.

Prerequisites: No prerequisites

Contents:

Unit No.	Particulars	Hours	Credits

1.	**Unit Title: Basic Introduction of DBMS and MySQL**
	Introduction of DBMS. How MySQL Works? Why we use MySQL, MySQL Features, How to install MySQL (XAMPP)
	MySQL Data Types:-Numeric, Date and Time, String
	MySQL Operator:-Arithmetic Operators, Comparison Operators, Logical Operators, Special Operators (LIKE, BETWEEN,EXIST,IN, IS NULL)
	Aggregate Functions : AVG,MIN,MAX,SUM,COUNT
	MySQL Commands :
	    DDL - CREATE, DROP,ALTER,SELECT
	    DML-INSERT , UPDATE, DELETE
	
	Using MySQL Workbench Interface : Create Database, Drop Database, Create table, Insert records in table, Delete records, Rename table, Drop Table, Drop database, Change column type or size, Add/Delete Column, Change column name.
	MySQL Queries :- Queries based on Insert, Update, Delete , Select statement using Where Clause.
		30	1

2.	**Unit Title: Advanced MySQL** MySQL Constraints (NOT NULL, UNIQUE, PRIMARY KEY, FOREIGN KEY, CHECK, DEFAULT), **MySQL Clauses(**WHERE Clause, ORDER BY clause, HAVING Clause, TOP Clause, GROUP BY Clause), **MySQL Join (**Cross Join, Natural Join), Establishing Relationship : Creating ER diagram of database in MySQL Workbench.	30	1

Following type of sample applications can be asked in exam

1. **Create a database BANKING with the following tables**

   Set appropriate datatypes and set primary keys and foreign keys, create relationship between tables and create E-R Model .

   - Customer(cid,c_name,address,email,city)
   - Loan(Loanid,cid,amount,rate_of_interest,loan_type,issue_date)
     Values for loan_type should be "HOUSING","PERSONAL" and "VEHICLE" only.

   Perform the following queries
   a) Update the city of cid=2 to "Ahmedabad"
   b) Display the loan details of customers where loan amount is > 50,000 and rate_of_interest is less than 4.5%.
   c) Display customer name, loan type and loan amount.
   d) Default value for rate_of_interest should be 6.5%.
   e) Arrange the records of customer in descending order of city.

2. **Create a database EVENT_MANAGEMENT with the following tables**

   Set appropriate datatypes and set primary keys and foreign keys, create relationship between tables and create E-R Model .

   - Event(eid,ename,start_date,end_date)
   - Participants(pid,eid,P_name,gender)
     Gender should be 'M' or 'F' only. And Value for ename should not be null and default value should be "BIRTHDAY".

   Perform the following queries
   a) Count the number of participants where eid=2.
   b) Display the records of participants who have participated in "BIRTHDAY".
   c) Display the records of events where ename begins with 'B'.
   d) Display all event starting between "2022/03/03" and "2022/05/05"
   e) Create a view EVENTDETAIL, that displays events other than "BIRTHDAY".

3. **Create a database BOOKDETAILS with the following tables**

   Set appropriate datatypes and set primary keys and foreign keys, create relationship between tables and create E-R Model.
   - Publisher(pid,pname,contact_no)
   - Book(bid,bname,price,pid,edition)

   Perform the following queries
   a) Display all the records from Book table where edition is either (1,2 or 4) using IN operator.
   b) Display only book name and publisher name where price is less than 500.
   c) Display the details of book where price is highest.
   d) Update the price of book to 2500 where edition is > 4
   e) Display the average price of the books.

4. **Create a database EMPLOYEE_DUTY with the following tables**

    Set appropriate datatypes and set primary keys and foreign keys, Create relationship between tables and create E-R Model .
    - Employee(empid,empname,skill,pay)
    - Duty(dutyid,empid,day,shift)

    Perform the following Queries:
    a) Display names of all employees who came on Monday.
    b) Find the employee names which ends with 'I'.
    c) Display total no. of employees where skill is other than "PROGRAMMERS".
    d) Display employee details where pay is more than 10000.
    e) Display employee details of where skill is "DBA".

5. **Create a database MYORDERS with the following tables**

    Set appropriate datatypes and set primary keys and foreign keys, create relationship between tables and create E-R Model .
    - Product(pid,pname,product_description,disc_available)
    - Order(pid,oid,odate,qty,price)
        Values for discount available should be 'Y' or 'N'
    Perform the following queries
    a) Display product details where disc_available is 'Y'.
    b) Display order details where quantity>5 and price< 2000.
    c) Display order details along with product name.
    d) Display minimum price order.
    e) Count the number of orders where price is > 2500.

6. **Create a database FACULTY_INFO with the following tables**

    Set appropriate datatypes and set primary keys and foreign keys, create relationship between tables and create E-R Model .

    - Faculty (fid,fname,qualification,salary)
    - Course(cid,fid,course_name,fees)
    Perform the following queries
    a) Default value for salary should be 10,000.
    b) Display the name of courses where fees are greater than 25000.
    c) Display the faculty names and course name for BCA course
    d) Display the records of faculties where qualification is "M.COM".
    e) Update the fees of course to 25000 where where course_name is "MCA"

7. **Create a database LIBRARY_DB with the following tables**

   Set appropriate datatypes and set primary keys and foreign keys. Create relationship between tables and create E-R Model.

   - Book_Category(catid,cat_name)
   - Book_details(bid,bname,publication,author,price,catid)

   Perform the following queries
   a) Display books where book name begins with letter "P" or "M".
   b) Update price of book "DATABASE" to 2000.
   c) Count number of books where publication is "DREAMTECH"
   d) Display books where price is >500 and catid is 2
   e) Create a view BOOK which will display all the book details where price is between 500 and 1000.

8. **Create a database HOSPITAL_DETAILS with the following tables**

   Set appropriate datatypes and set primary keys and foreign keys,create relationship between tables and create E-R Model .
   - Doctor(docid,name,dept,gender)
   - Patient(pid,pname,disease,docid,charges)

   Perform the following queries
   a) Display the records for doctors where dept = "Surgery".
   b) Display the records of patients treated by MALE doctors.
   c) Display the patients records where disease is "APPENDIX".
   d) Count the number of patients where docid is 2
   e) Display the records of doctors where doctors name begins with letter S.

9. **Create a database MOBILE_DETAILS with the following tables**

   Set appropriate datatypes and set primary keys and foreign keys, create relationship between tables and create E-R Model .
   - Handsets(mobid,mobname,touchscreen,type,cost,qty)
   - vendor (vid,mobid,shopname,city)

     Value for touchscreen should be either "Y" or "N"

   Perform the following queries
   a) Handset type should be "CDMA" , "Smartphone" and "GSM" only.
   b) Display handset details for "AHMEDABAD" city
   c) Display the shop name where mobid = 5.
   d) Update city to Mumbai where qty > 6.
   e) Display handset details where touchscreen = 'Y'.

10. **Create a database PAYROLL with the following tables**

    Set appropriate datatypes and set primary keys and foreign keys,create relationship between tables and create E-R Model .
    - Item(itemid,item_name,quantity,price,sid)
    - Supplier(sid,sname,contact_no,address)

Perform the following queries
   a) Default value for quantity should be 10.
   b) Display all the records from items where quantity > 15 and price > 2000.
   c) Update quantity = 12 where price < 2000.
   d) Count the number of items where sid=4.
   e) Create a view ITEMDETAIL which displays all the items where quantity is >50 in descending order of item name.

Course Name: Data Management Software for Business

Course Code: IDC-BCA-124T

Credits: 2

Course Outcomes:

At the end of the course, the student will be able
- Understand the importance of data management in business operations and decision-making.
- Evaluate and compare different data management software solutions available in the market.
- Apply data management techniques to organize, store, and retrieve business data effectively.
- Analyze and interpret data using software tools to derive valuable insights for business growth.

Prerequisites: NIL

Contents:

Unit No.	Particulars	Hours	Credits
1.	**Indian Knowledge System** **Data Analytics and its root in ancient India:** The setup: learning Centre of ancient India, the story of experimental projects, science: a path of logic and faith, The predictive model of handprints, Data analytics in ancient times, Epilogue: the power of data **Artificial Intelligence & Ancient Indian Texts and Vedas -An Analysis:** Role of Books vis-a-vis Ancient Indian Texts, Role of Artificial Intelligence, An Exploratory study on Origin of AI, Methodology & Description of Artificial Intelligence in Ancient Indian Texts, Technological descriptions with modern scientific proofs, Present Effects of AI, A Smarter Future, Envisioning AI in Future	15	1

2.	**Introduction to Data Management System and Data Models.** Data VS Information, **Database:** Introduction of the database and the DBMS, Role, Advantages and Disadvantages of DBMS, Types of Database, **Database System**: The Database System Environment, DBMS functions, **Data Model Basic Building Block:** The Relational Model, The E-R Model, The Object-Oriented Model, Newer Data Models :- Object/Relational and XML. **The Relational Database Model:** Tables and its characteristics, Keys, Integrity Rules, Concepts of functional dependency, Relational Set operations, The Data Dictionary and The System Catalog, Relationship within the Relational Database: The 1:M Relationship, The 1:1 Relationship, The M:N Relationship, The concept of data redundancy.	15	1

Web References:

https://www.linkedin.com/pulse/data-analytics-its-root-ancient-india-adarsh-srivastava/

https://medium.com/@spkulsari/artificial-intelligence-ancient-indian-texts-and-vedas-an-analysis-f83a8d1e80b9

References:

Database System Concepts (First Edition: 2008)
Publisher: Cengage Learning
By Peter Rob and Carlos Coronel

Accomplishments of the student after completing the Course:

After completion of this course, students will be able to
- Know about Database system and its advantages
- Learn different types of data models used in the DBMS.
- Knowing concept of Data Dictionary and different types of relationship in database.

Course Name: Business Data Analytics using Speadsheets

Course Code: IDC-BCA-124 P

Credits: 2

Course Outcomes:

At the end of the course, the student will be able
- Make meaningful representations of data in the form of charts and pivot tables.
- Draw analysis on data using spreadsheets and use interpretation to make decisions.
- Format word documents with appropriate formatting, layout, proofing.
- Manage data for generating queries, forms and reports in a database.

Prerequisites: One should have basic knowledge of Computer basics.

Contents:

Unit No.	Particulars	Hours	Credits
1.	**Unit Title : Analyze Data Using Google Sheet**	**30**	**01**
	Create macro in given sheet, Create chart in given sheet, Insert pivot table in given sheet, Use smart chips in your created project, Provide link of other sheet or documents or web, Provide Data Validation, Remove duplication by using Data Cleanup, Use data Extraction in your project, Split Text to column by using custom option, Use column stats, Add Slicer.		
2.	**Unit Title : Google sheet Tools Overview**	**30**	**01**
	Create new form and Manage It, Create add-ons and Manage add-ons, Create App Use VLOOKUP in given sheet, Create a Custom Business Analytics Dashboard with Google Sheets Build a Reporting Dashboard in google sheet, Pull Data From Any Data into your dashboard, Create a script in your project, Automatically Add Contacts From a Google Sheet, Use goal seek, Generate Google Calendar events from new Google Sheet rows		

References:
The Ultimate Guide to Google Sheets : Everything you need to build powerful spreadsheet workflows in Google Sheets (Zapier App Guides Book 7)
 https://www.w3schools.com

Accomplishments of the student after completing the Course:

After completion of this course, students will be able to
- Students become proficient in using spreadsheets to analyze and interpret data.
- Through practical exercises and case studies, students learn to make data-driven decisions and identify trends and patterns that can guide business strategies.
- Students develop problem-solving skills by working on real-world business scenarios, finding solutions using data analysis, and presenting their findings effectively.