



FIRST-YEAR OF BACHELOR OF COMPUTER SCIENCE MAJOR REVISED SYLLABUS ACCORDING TO CBCS NEP2020

COURSE TITLE: DATABASE SYSTEM
SEMESTER-II, W.E.F. 2023-2024

**Recommended by the Board of Studies in Computer Science
And**

Approved by the Academic Council

Devrukh Shikshan Prasarak Mandal's

Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and
Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh.
Tal. Sangameshwar, Dist. Ratnagiri-415804, Maharashtra,
India

Academic Council Item No: _____

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangameshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Science
Name of the Department	:	Computer Science
Name of the Class	:	First Year
Semester	:	Second
No. of Credits	:	02
Title of the Course	:	Database System
Course Code	:	S104CST
Name of the Vertical in adherence to NEP 2020	:	Major and Minor
Eligibility for Admission	:	Any 12 th Pass seeking Admission to Degree Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for TE and CIA	:	60:40
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2023-2024
Ordinances /Regulations (if any)	:	

Syllabus for First Year of Bachelor of Science in Computer Science

(With effect from the academic year 2023-2024)

SEMESTER-II

Paper No.– 1

Course Title: Database System

No. of Credits - 02

Type of Vertical: Major and Minor

COURSE CODE: S104CST

Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to...		
Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Remember	Students should be able to evaluate business information problem and find the requirements of a problem in terms of data.
CLO-02	Understand	Students should be able to design the database schema with the use of appropriate data types for storage of data in database.
CLO-03	Analyse	Students should be able to create, manipulate, query and back up the databases.

Syllabus for First Year of Bachelor of Science in Computer Science

(With effect from the academic year 2023-2024)

SEMESTER-II

Paper No.– 1

Course Title: Database System

No. of Credits - 02

Type of Vertical: Major and Minor

COURSE CODE: S104C

COURSE CONTENT			
Module No.	Content	Credits	No. of Lectures
1	<p>Introduction to DBMS – Database, DBMS – Definition, Overview of DBMS, Advantages of DBMS, Levels of abstraction, Data independence, DBMS Architecture</p> <p>Data models - Client/Server Architecture, Object Based Logical Model, Record Based Logical Model (relational, hierarchical, network)</p> <p>Entity Relationship Model - Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER)</p> <p>Relational data model– Domains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint ER to Table- Entity to Table, Relationship to tables with and without key constraints.</p> <p>Schema refinement and Normal forms: Functional dependencies, first, second, third, and BCNF normal forms based on primary keys, lossless join decomposition.</p> <p>Relational Algebra operations (selection, projection, set operations union, intersection, difference, cross product, Joins –conditional, equi join and natural joins, division)</p>	1	15
	<p>DDL Statements - Creating Databases, Using Databases, datatypes, Creating Tables (with</p>		

2	<p>integrity constraints – primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables, Backing Up and Restoring databases</p> <p>DML Statements – Viewing the structure of a table insert, update, delete, Select all columns, specific columns, unique records, conditional select, in clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause</p> <p>Functions – String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse)</p> <p>Joining Tables – inner join, outer join (left outer, right outer, full outer)</p> <p>Subqueries – subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries</p> <p>Database Protection: Security Issues, Threats to Databases, Security Mechanisms, Role of DBA, Discretionary Access Control</p> <p>Views (creating, altering dropping, renaming and manipulating views)</p> <p>DCL Statements (creating/dropping users, privileges introduction, granting/revoking privileges, viewing privileges)</p>	1	15
	Total	2	30

Required Previous Knowledge

Students should know basic concepts related to computer and computer handling

Access to the Course

The course is available for all the students admitted for Bachelor of Science (Computer Science).

Forms of Assessment

The assessment of the course will be of Formative and Summative type. At the beginning of the course diagnostic assessment will be carried out. The formative assessment will be used for the Continuous Internal Evaluation whereas the summative assessment will be conducted at the end of the term. The weightage for formative and summative assessment will be 60:40. The detailed pattern is as given below.

Semester End Evaluation (60 Marks)

Question Paper Pattern

Time: 2 hours

Question No.	Unit/s	Question Pattern	Marks
Q.1	I	Descriptive Questions (Any 3 out of 6)	15
Q.2	II	Descriptive Questions (Any 3 out of 6)	15
Total			30

Internal evaluation (40 Marks)

Sr. No.	Description	Marks
1	Classroom Tests	10
2	Project/ Viva/ Presentations/ Assignments	05
3	Attendance	05
Total		20

Grading Scale

10 points grading scale will be used. The grading scale used is O to F. Grade O is the highest passing grade on the grading scale, and grade F is a fail. The Board of Examinations of the college reserves the right to change the grading scale.

Reference book:

- Ramez Elmasri & Shamkant B.Navathe, Fundamentals of Database Systems, Pearson Education, Sixth Edition, 2010
- Ramakrishnam, Gehrke, Database Management Systems, McGraw-Hill, 2007
- Joel Murach, Murach's MySQL, Murach, 2012

Text book:

- Techmax publication book

Additional

References:

Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce and Vid. Dadasaheb Pitre Science College, Devrukh (An Autonomous College Affiliated with University of Mumbai)

- Robert Sheldon, Geoff Moes, Begning MySQL, Wrox Press, 2005.