OE - Final

Since 1980

Devoted to Serve

Royal College of Arts, Science and Commerce

(Autonomous)

Affiliated to University of Mumbai

Program: Bachelor of Science

Course: Computer Science

Syllabus for Semester: III and IV

Syllabus for Undergraduate Programme as per National Education Policy (NEP-2020) with effect from the Academic year 2025-2026

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Open Electives offered by Computer Science

Semester – III				
Course Code	**Course Type**	**Course Title**	**Credits**	**Lectures/week**
RUCSOE306	Open Elective	**Web Designing**	2	2

Semester – IV				
Course Code	**Course Type**	**Course Title**	**Credits**	**Lectures/week**
RUCSOE406	Open Elective	**Structured Query Language**	2	2

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SEMESTER III

Course/ Paper Title	**Web Designing**
Course offered as	**Open Elective**
Course Code	**RUCSOE306**
Semester	**III**
No. of Credits	**2**
No. of lecture Hours/week	**2**

Sr No.	Course Objectives:
CLO1	To introduce the fundamental concepts of the Internet, World Wide Web (WWW), and web technologies.
CLO2	To provide an understanding of the structure and functionality of web browsers, URLs, and web servers.
CLO3	To enable students to design and format web elements such as tables, images, lists, and frames.
CLO4	To develop foundational skills in HTML for creating structured web pages using various markup tags.
CLO5	To introduce styling concepts using CSS and its different types for enhancing web pages.

Course Outcome

	On completing the course, the student will be able to:
CO1	Describe the fundamental concepts of the Internet, WWW, web browsers, URLs, and web servers.
CO2	Differentiate between static and dynamic websites and understand their applications.
CO3	Design basic web pages using HTML, including headings, paragraphs, lists, and tables.
CO4	Implement multimedia elements such as images and videos into web pages.
CO5	Implement external, internal, and inline CSS for enhanced web design.
CO6	Develop well-structured forms and user input controls to enhance interactivity.

Detailed Syllabus

Module	Title with content	No. of lectures
I	**Introduction to Internet**- World Wide Web, Browser, URL, Web server and types of sites. Static vs. dynamic web sites, website, homepage, Basics of Web Designing & Applications, Multimedia and its Applications, Web Technologies. **HTML:** HTML Documents, Basic structure of an HTML document, Creating an HTML document, Markup Tags, Heading-Paragraphs, Line Breaks, HTML Tags, Background, **Working with Text:** Bold, Italic, Teletype, Underline, Strikethrough, Superscript, Subscript, DIV tag, displaying special characters. **Working with Lists**: Unordered Lists, Ordered Lists, Definition list Nested Lists. **Working with Table:** Table tag with attributes. TABLE, TR,TH, TD tags. Border, cell spacing, cell padding, width, align, bgcolor attributes.	**15**
II	**Working with Images**: Image, Inserting Images, formatting image for sizing, alignment. Border and using other attributes with IMG tag. Inserting image as page background Creating Solid color page background. **Working with Hyperlink**: URL - Uniform Resource Locator, URL Encoding. **Working with Forms and controls**: <input>, <textarea>, <button>, <select>, <label> Headers: Title, Base, Link, Styles. **CSS:** Introduction, Features and benefits of CSS, CSS Syntax, Different types of Style Sheets, External Style Sheet using , Multiple Style Sheets, CSS Properties, **CSS Styling** : Background, Text Format, Controlling Fonts, Working with block elements and objects, Working with Lists and Tables	**15**

References:

1. HTML 5 step by step, Faithe Wempen, Microsoft Press
2. HTML 5 in simple steps, Dreamtech Press, Kogent Learning Solutions Inc.
3. Jennifer Niederst Robbins, Learning Web Design: A Beginner's Guide To HTML, CSS, JavaScript, And Web Graphics, O'reilly

Additional References:

1. John Duckett Beginning HTML, XHTML, CSS, and JavaScript Wiley India.
2. Jon Duckett, HTML And CSS: Design And Build Websites, Wiley

SEMESTER IV

Course/ Paper Title	**Structured Query Language (SQL)**
Course offered as	**Open Elective**
Course Code	**RUCSOE406**
Semester	**IV**
No. of Credits	**2**
No. of lecture Hours/week	**2**

Sr No.	Course Objectives:
CLO1	Understand basic database concepts, including data, records, and the differences between file-oriented systems and DBMS.
CLO2	Explain data abstraction, schemas, data independence, and DBMS architecture.
CLO3	Design databases using the ER model and convert ER diagrams into relational schemas.
CLO4	Use DDL commands to create, alter, and manage databases and tables.
CLO5	Use DML commands and SQL functions for querying and manipulating data.

Course Outcome

	On completing the course, the student will be able to:
CO1	Understand the purpose and structure of database systems.
CO2	Learn to design databases using the ER model and relational schemas.
CO3	Master DDL commands for managing database structures.
CO4	Learn DML commands for data manipulation and querying.
CO5	Apply SQL functions for data transformation and retrieval.

Module	Topics	No. of Lectures
1	**Introduction**: Overview, Definition, purpose of database system, Concepts and database, Data, Information, Data Item or Fields, Records, Files, Advantage and Disadvantages of File Oriented system. Advantages and disadvantages of DBMS, File oriented System versus database system. Data abstraction, schema, Data Independence, DBMS Architecture. **Entity Relationship Model:** Relational databases, transaction management , Database design and ER Model, ER-Diagrams, Relational Model concepts, Relational Model Constraints and relational database schemas.	**15**
2	**Database languages:** **Data Definition Language (DDL):** Creating Databases, Using Databases, data types, Creating Tables, Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables **Data Manipulation Language(DML) :** Viewing the structure of a table insert, update, delete, Select all columns, specific columns, unique records, conditional select, in clause, between clause **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), aggregate functions (count, min, max, avg, sum)	**15**

References:

1. "Fundamentals of Database System", ElmasriRamez, NavatheShamkant, Pearson Education, Seventh edition, 2017
2. "Database Management Systems", Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition, 2014
3. "Murach's MySQL", Joel Murach, 3rd Edition, 3rd Edition, 2019

Additional References:

1. "Database System Concepts", Abraham Silberschatz, HenryF.Korth, S.Sudarshan, McGraw Hill, 2017
2. "MySQL: The Complete Reference", VikramVaswani , McGraw Hill, 2017
3. "Learn SQL with MySQL: Retrieve and Manipulate Data Using SQL Commands with Ease", Ashwin Pajankar, BPB Publications, 2020

Semester III & IV Examination Pattern

Evaluation Pattern (2 Credit Courses) (50 marks)

- Class Test (25 marks)
- Project/Assignment/Case Study (20 Marks)
- Attendance (05 marks)