Uka Tarsadia University

B.Tech.

Semester III

WEB DEVELOPMENT

IT4017

Effective From July-2022

Syllabus version: 1.00

Subject Code	Subject Title	Teaching Scheme			
		Hours		Credits	
		Theory	Practical	Theory	Practical
IT4017	Web Development	3	4	3	2

Subject Code	Subject Title	Theory Examination Marks		Practical Examination Marks	Total Marks
		Internal	External	CIE	
IT4017	Web Development	40	60	100	200

Objectives of the course:

- To provide knowledge of server-side cross-platform HTML-embedded scripts with the latest version of PHP.
- To implement dynamic Web pages that can interact with databases and files using MVC architecture.

Course Outcomes:

Upon completion of the course, the student will be able to,

CO1: Understand server-side scripting, PHP variable types, their scope and control structure.

CO2: Understand and apply string, arrays and functions.

CO3: Apply PHP scripts to handle HTML forms elements

CO4: Understand OOP concept for developing Web pages

CO5: Develop dynamic Web pages using the database connectivity, session management and file handling

CO6: Develop interactive Web pages by combining concepts of Ajax with PHP

Sr. No.	Topics	Hours
Unit – I		
1	**Basics of Web Development:** Introduction of client server architecture, Difference between client-side and server-side scripting, PHP framework application structure, MVC approach, Introduction of PHP - Variables, Constants, Data types, Math operators and Decision making statements.	6
Unit – II		

2	**Strings, Arrays and Functions:** The string function, String conversion, Formatting text string, Building an array and modifying data in an array, Deleting array, Handling arrays with loops, Array functions, Extracting data from array, Sorting array, Array operators, Multidimensional arrays, Splitting, Merging, and other array functions.	8
Unit – III		
3	**Reading data in Web pages and Browser Handling:** Handling form elements, Using server's variables and HTTP headers, Dumping form's data, Handle data with custom array, Performing data validation, Client-side validation, Handling HTML tags in user input.	8
Unit – IV		
4	**Object Oriented Programming:** Creating classes and objects, Setting access to properties and methods, Initialise objects, Inheritance, Overriding, Overloading, Auto overloading classes, Static methods, Static members and inheritance, Creating abstract classes and interfaces, Comparing objects, Creating class constants, *final* keyword, Cloning objects and reflections.	7
Unit – V		
5	**Working with File and Databases:** File operations - open, read, write, delete, lock, and parse, Creating MySQL database, New table, Data entry in databases, Accessing databases, CRUD operations, Sorting data, Setting cookies, Reading a cookie, Delete a cookie, Working with FTP, Downloading and updating files with FTP, Creating and removing directions with FTP, Sending email, Storing data in sessions.	8
Unit – VI		
6	**Ajax:** Introduction to Ajax, Writing Ajax, Working with *XMLHttpRequest* object, Handling downloaded data, Ajax with PHP, Passing data to server using GET and POST method, Handling XML with PHP, Handling concurrent Ajax requests, Connecting to Web services Getting data with head request.	8

Sr. No.	**Web Development (Practical)**	**Hours**
1	Write a PHP script to demonstrate the usage of all the basic data types mentioned above and constants.	2
2	Write a PHP script to calculate percentage of a student using switch case statement and accordingly award grade using if…elseif ladder.	2

3	a) Write a PHP script to calculate first 20 numbers of fibonacci series. b) Write a PHP script to calculate sum of prime numbers from 1 to 100. c) Write a PHP script to draw pascal triangle till level 5. d) Write a PHP script to take username and password as input and print it as key- value pair.	4
4	a) Write a PHP script to find unique elements from two associative arrays. b) Write a PHP script to calculate matrix multiplication of indexed array	4
5	Write a PHP script to take input from an HTML form.	6
6	Write a PHP script using framework for storing and retrieving user information from MySQL table. a) Design a HTML registration and login page which takes name, password, email and mobile number from user. b) Store this data in MySQL database. c) On next page display all user in HTML table using PHP. d) Update/Delete details of user.	8
7	Implement session and cookie to maintain session during login and implement visitor counter.	4
8	Write a PHP script to create a file upload and download portal.	6
9	Write a PHP script to verify new user via email and mobile number.	2
10	Write a PHP script to implement “Forget Password” functionality.	4
11	Write a PHP script to perform password validation as per rules given.	2
12	Write a program using AJAX and PHP to demonstrate how a Web page can communicate with the Web server while a user type characters in input field.	4
13	Integrate google reCAPTCHA with PHP.	2
14	Project	10

Text book:

1. Steven Holzner - “PHP: The Complete Reference”, 2007, McGraw Hill Publication.

Reference books:

1. Thomas Myer - “Professional CodeIgniter”, 2008, Wiley India.
2. Tom Butler, Kevin Yank - “PHP & MySQL: Novice to Ninja”, 6th Edition/2017, SitePoint.
3. Laura Thomson, Luke Welling, “PHP And Mysql Web Development”, 5th Edition/2016 Pearson.

Course objectives and Course outcomes mapping:

- To provide knowledge of server-side cross-platform HTML-embedded scripts with the latest version of PHP: CO1, CO2, CO3
- To implement dynamic Web pages that can interact with databases and files using MVC architecture: CO4, CO5, CO6

Course units and Course outcome mapping:

Unit No.	Unit Name	Course Outcomes					
		CO1	CO2	CO3	CO4	CO5	CO6
1	Basics of Web Development	✓					
2	Strings, Arrays and Functions		✓				
3	Reading data in Web pages and Browser Handling			✓			
4	Object Oriented Programming				✓		
5	Working with File and Databases					✓	
6	Ajax						✓

Programme Outcomes:

PO 1: Engineering knowledge: An ability to apply knowledge of mathematics, science, and engineering.

PO 2: Problem analysis: An ability to identify, formulates, and solves engineering problems.

PO 3: Design/development of solutions: An ability to design a system, component, or process to meet desired needs within realistic constraints.

PO 4: Conduct investigations of complex problems: An ability to use the techniques, skills, and modern engineering tools necessary for solving engineering problems.

PO 5: Modern tool usage: The broad education and understanding of new engineering techniques necessary to solve engineering problems.

PO 6: The engineer and society: Achieve professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.

PO 7: Environment and sustainability: Articulate a comprehensive world view that integrates diverse approaches to sustainability.

PO 8: Ethics: Identify and demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work.

PO 9: Individual and team work: An ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give/receive clear instructions.

PO 11: Project management and finance: An ability to demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: A recognition of the need for, and an ability to engage in life-long learning.

Programme Outcomes and Course Outcomes mapping:

Programme Outcomes	Course Outcomes					
	CO1	CO2	CO3	CO4	CO5	CO6
PO1	✓	✓	✓	✓	✓	✓
PO2						
PO3			✓	✓	✓	✓
PO4						
PO5			✓	✓	✓	✓
PO6						

PO7						
PO8						
PO9						
PO10						
PO11						
PO12						

Uka Tarsadia University

B.Tech.

Semester III

WEB DEVELOPMENT

IT4017

Effective From July-2022

Syllabus version: 1.00

Subject Code	Subject Title	Teaching Scheme			
		Hours		Credits	
		Theory	Practical	Theory	Practical
IT4017	Web Development	3	4	3	2

Subject Code	Subject Title	Theory Examination Marks		Practical Examination Marks	Total Marks
		Internal	External	CIE	
IT4017	Web Development	40	60	100	200

Objectives of the course:

- To provide knowledge of server-side cross-platform HTML-embedded scripts with the latest version of PHP.
- To implement dynamic Web pages that can interact with databases and files using MVC architecture.

Course Outcomes:

Upon completion of the course, the student will be able to,

CO1: Understand server-side scripting, PHP variable types, their scope and control structure.

CO2: Understand and apply string, arrays and functions.

CO3: Apply PHP scripts to handle HTML forms elements

CO4: Understand OOP concept for developing Web pages

CO5: Develop dynamic Web pages using the database connectivity, session management and file handling

CO6: Develop interactive Web pages by combining concepts of Ajax with PHP

Sr. No.	Topics	Hours
Unit – I		
1	**Basics of Web Development:** Introduction of client server architecture, Difference between client-side and server-side scripting, PHP framework application structure, MVC approach, Introduction of PHP - Variables, Constants, Data types, Math operators and Decision making statements.	6
Unit – II		

2	**Strings, Arrays and Functions:** The string function, String conversion, Formatting text string, Building an array and modifying data in an array, Deleting array, Handling arrays with loops, Array functions, Extracting data from array, Sorting array, Array operators, Multidimensional arrays, Splitting, Merging, and other array functions.	8
Unit – III		
3	**Reading data in Web pages and Browser Handling:** Handling form elements, Using server's variables and HTTP headers, Dumping form's data, Handle data with custom array, Performing data validation, Client-side validation, Handling HTML tags in user input.	8
Unit – IV		
4	**Object Oriented Programming:** Creating classes and objects, Setting access to properties and methods, Initialise objects, Inheritance, Overriding, Overloading, Auto overloading classes, Static methods, Static members and inheritance, Creating abstract classes and interfaces, Comparing objects, Creating class constants, *final* keyword, Cloning objects and reflections.	7
Unit – V		
5	**Working with File and Databases:** File operations - open, read, write, delete, lock, and parse, Creating MySQL database, New table, Data entry in databases, Accessing databases, CRUD operations, Sorting data, Setting cookies, Reading a cookie, Delete a cookie, Working with FTP, Downloading and updating files with FTP, Creating and removing directions with FTP, Sending email, Storing data in sessions.	8
Unit – VI		
6	**Ajax:** Introduction to Ajax, Writing Ajax, Working with *XMLHttpRequest* object, Handling downloaded data, Ajax with PHP, Passing data to server using GET and POST method, Handling XML with PHP, Handling concurrent Ajax requests, Connecting to Web services Getting data with head request.	8

Sr. No.	**Web Development (Practical)**	**Hours**
1	Write a PHP script to demonstrate the usage of all the basic data types mentioned above and constants.	2
2	Write a PHP script to calculate percentage of a student using switch case statement and accordingly award grade using if…elseif ladder.	2

3	a) Write a PHP script to calculate first 20 numbers of fibonacci series. b) Write a PHP script to calculate sum of prime numbers from 1 to 100. c) Write a PHP script to draw pascal triangle till level 5. d) Write a PHP script to take username and password as input and print it as key- value pair.	4
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6	Write a PHP script using framework for storing and retrieving user information from MySQL table. a) Design a HTML registration and login page which takes name, password, email and mobile number from user. b) Store this data in MySQL database. c) On next page display all user in HTML table using PHP. d) Update/Delete details of user.	8
7	Implement session and cookie to maintain session during login and implement visitor counter.	4
8	Write a PHP script to create a file upload and download portal.	6
9	Write a PHP script to verify new user via email and mobile number.	2
10	Write a PHP script to implement “Forget Password” functionality.	4
11	Write a PHP script to perform password validation as per rules given.	2
12	Write a program using AJAX and PHP to demonstrate how a Web page can communicate with the Web server while a user type characters in input field.	4
13	Integrate google reCAPTCHA with PHP.	2
14	Project	10

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1. Steven Holzner - “PHP: The Complete Reference”, 2007, McGraw Hill Publication.

Reference books:

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3. Laura Thomson, Luke Welling, “PHP And Mysql Web Development”, 5th Edition/2016 Pearson.

Course objectives and Course outcomes mapping:

- To provide knowledge of server-side cross-platform HTML-embedded scripts with the latest version of PHP: CO1, CO2, CO3
- To implement dynamic Web pages that can interact with databases and files using MVC architecture: CO4, CO5, CO6

Course units and Course outcome mapping:

Unit No.	Unit Name	Course Outcomes					
		CO1	CO2	CO3	CO4	CO5	CO6
1	Basics of Web Development	✓					
2	Strings, Arrays and Functions		✓				
3	Reading data in Web pages and Browser Handling			✓			
4	Object Oriented Programming				✓		
5	Working with File and Databases					✓	
6	Ajax						✓

Programme Outcomes:

PO 1: Engineering knowledge: An ability to apply knowledge of mathematics, science, and engineering.

PO 2: Problem analysis: An ability to identify, formulates, and solves engineering problems.

PO 3: Design/development of solutions: An ability to design a system, component, or process to meet desired needs within realistic constraints.

PO 4: Conduct investigations of complex problems: An ability to use the techniques, skills, and modern engineering tools necessary for solving engineering problems.

PO 5: Modern tool usage: The broad education and understanding of new engineering techniques necessary to solve engineering problems.

PO 6: The engineer and society: Achieve professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.

PO 7: Environment and sustainability: Articulate a comprehensive world view that integrates diverse approaches to sustainability.

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PO 9: Individual and team work: An ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

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PO 12: Life-long learning: A recognition of the need for, and an ability to engage in life-long learning.

Programme Outcomes and Course Outcomes mapping:

Programme Outcomes	Course Outcomes					
	CO1	CO2	CO3	CO4	CO5	CO6
PO1	✓	✓	✓	✓	✓	✓
PO2						
PO3			✓	✓	✓	✓
PO4						
PO5			✓	✓	✓	✓
PO6						

PO7						
PO8						
PO9						
PO10						
PO11						
PO12						

Uka Tarsadia University

B. Tech.

Semester III

PROGRAMMING WITH JAVA

IT4016

Effective from July-2022

Syllabus version: 1.00

Subject Code	Subject Title	Teaching Scheme			
		Hours		Credits	
		Theory	Practical	Theory	Practical
IT4016	Programming with JAVA	3	2	3	1

Subject Code	Subject Title	Theory Examination Marks		Practical Examination Marks	Total Marks
		Internal	External	CIE	
IT4016	Programming with JAVA	40	60	50	150

Objectives of the course:

- To unfold concepts of object-oriented programming paradigms.
- To educate students about programming by developing an understanding about concepts of Java programming.

Course outcomes:

Upon completion of the course, the student shall be able to,

CO1: Use various Java constructs, features and describe the concepts of object-oriented paradigm with Java programming

CO2: Able to understand and applied basic programming concepts using Java

CO3: Demonstrate how to define and use classes, create objects and methods, how to override and overload methods with its elements to solve the basic problems

CO4: Illustrate concepts of object-oriented paradigm with Java programming

CO5: Understand and apply exception handling and multithreading in Java

CO6: Understand and apply I/O and Applets

Sr. No.	Topics	Hours
	Unit – I	
1	**Introduction to Object Oriented Programming and Concepts of Java:** Procedure oriented programming vs. Object oriented programming, Java history, Java features, Object oriented programming concepts – Classes, Objects, Data encapsulation and Abstraction, Inheritance, Polymorphism, Dynamic binding, Message passing, Control statements, Java Virtual Machine (JVM) and byte code, Java environment setup, Simple Java program, Java language specification API, Java Development Kit (JDK) and IDE, Programming style, Documentation and Errors, Command line argument, Data types and variables, Type conversion and casting, Scope of variables and default values of variable.	6
	Unit – II	
2	**Operators, Control Statements, Array and String:** Type of operators, Control statements – *if, else*, nested *if, if-else* ladders, *switch, while, do-while, for, for-each, break, continue, enum* data types, Single dimensional arrays, Multidimensional arrays, *String* class, *StringBuffer* class, Operations on string, Use of wrapper class.	8
	Unit – III	
3	**Class, Object and Methods:** Object, *Class* and Methods, Access modifier, Method overloading, Passing and returning object form method, Constructors, Constructor overloading, Nested classes, *this* keyword and *static* keyword, Garbage collector.	8
	Unit – IV	
4	**Inheritance, Packages and Interface:** Inheritance, Super and sub class, Overriding methods, Polymorphism, Dynamic binding, *super* keyword, *final* Keyword, *abstract* methods and classes, Introduction to *interface*, *interface* vs. *abstract* classes, Packages.	9
	Unit – V	
5	**Exception Handling and Multithreading:** Exception - *try…catch* statement, Multiple catch blocks, *throw and throws* keywords, *finally* clauses, User defined exception, Thread, Thread life cycle and methods, Creating threads, Thread priority, Multithreading and Thread synchronization.	8

Unit – VI		
6	**I/O and Applets:** I/O basics, Reading console input, Writing console output, The *PrintWriter* Class, Reading and writing Files, Applets fundamentals.	6

Sr. No.	Programming with JAVA (Practical)	Hours
1	Write a Program that displays Welcome to AMTICS.	2
2	Write a program for calculator.	2
3	Write a program that reads a number in meters, converts it to feet, and displays the result.	2
4	Write a program to print inputs given from command line arguments on the console.	2
5	Write a program that prompts the user to enter three integers and display the integers in decreasing order.	2
6	Write a program that prompts the user to enter a letter and check whether a letter is a vowel or constant.	2
7	Assume a vehicle plate number consists of three uppercase letters followed by four digits. Write a program to generate a plate number.	2
8	Write a test program that prompts the user to enter ten numbers, invoke a method to reverse the numbers, display the numbers.	2
9	Write a program that generate 6*6 two-dimensional matrix, filled with 0's and 1's , display the matrix, check every raw and column have an odd number's of 1's.	2
10	Write an application that illustrates method overriding in the same package and different packages.	2
11	Describe *abstract* class called Shape which has three subclasses say Triangle, Rectangle, Circle. Define one method area() in the *abstract* class and override this area() in these three subclasses to calculate for specific object i.e. area() of Triangle subclass should calculate area of triangle etc. Same for Rectangle and Circle.	2
12	Write a program in Java to demonstrate implementation of multiple inheritance using *interfaces*.	2
13	Write a program in Java to develop user defined exception for 'Divide by Zero' error.	2
14	Write a program in Java to demonstrate multiple *try* block and multiple *catch* exception.	2
15	Write a program that executes two threads. One thread displays "Thread1" every 2,000 milliseconds, and the other displays "Thread2" every 4,000 milliseconds. Create the threads by extending the Thread class.	2

Text book:

1. Herbert Schildt – "Java – Complete Reference"- Eleventh Edition, McGraw Hill.

Reference books:

1. Sachin Malhotra and Saurabh Chaudhary – "Programming in Java" - Second Edition, Oxford University Press.
2. E Balagurusamy - "Programming with JAVA" - Sixth Edition, McGraw-Hill.
3. Daniel Liang – "Introduction to Java Programming (Comprehensive version)", Pearson.

Course objectives and Course outcomes mapping:

- Understand fundamentals of object-oriented programming and basics of Java programming: CO1, CO2, CO3
- Create Java programs using sound OOP practices such as interfaces, exception handling and multithreading: CO4, CO5, CO6

Course units and Course outcomes mapping:

Unit No.	Unit Name	Course Outcomes					
		CO1	CO2	CO3	CO4	CO5	CO6
1	Introduction to Object Oriented Programming and Concepts of Java	✓					
2	Operators, Control Statements, Array and String		✓				
3	Class, Object and Methods			✓			
4	Inheritance, Packages and Interface				✓		
5	Exception Handling and Multithreading					✓	
6	I/O and Applets						✓

Programme outcomes:

PO 1: Engineering knowledge: An ability to apply knowledge of mathematics, science, and engineering.

PO 2: Problem analysis: An ability to identify, formulates, and solves engineering problems.

PO 3: Design/development of solutions: An ability to design a system, component, or process to meet desired needs within realistic constraints.

PO 4: Conduct investigations of complex problems: An ability to use the techniques, skills, and modern engineering tools necessary for solving engineering problems.

PO 5: Modern tool usage: The broad education and understanding of new engineering techniques necessary to solve engineering problems.

PO 6: The engineer and society: Achieve professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.

PO 7: Environment and sustainability: Articulate a comprehensive world view that integrates diverse approaches to sustainability.

PO 8: Ethics: Identify and demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work.

PO 9: Individual and team work: An ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give/receive clear instructions.

PO 11: Project management and finance: An ability to demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: A recognition of the need for, and an ability to engage in life-long learning.

Programme outcomes and Course outcomes mapping:

Programme Outcomes	Course Outcomes					
	CO1	CO2	CO3	CO4	CO5	CO6
PO1	✓	✓	✓	✓	✓	✓
PO2		✓	✓	✓		✓
PO3		✓		✓		
PO4						
PO5			✓		✓	
PO6						
PO7						
PO8						
PO9						
PO10						
PO11				✓	✓	
PO12						

Uka Tarsadia University

B. Tech.

Semester III

Database Management System

CE4012

Effective from July-2022

Syllabus version: 1.00

Subject Code	Subject Title	Teaching Scheme			
		Hours		Credits	
		Theory	Practical	Theory	Practical
CE4012	Database Management System	3	4	3	2

Subject Code	Subject Title	Theory Examination Marks		Practical Examination Marks	Total Marks
		Internal	External	CIE	
CE4012	Database Management System	40	60	100	200

Objectives of the course:

- To develop understanding about primary concepts of database management system and database design.
- To unfold Structured Query Language (SQL) along with its applications.

Course outcomes:

Upon completion of the course, the student shall be able to,

CO1: Recognize the need for a database management system. Construct relational model and formulate relational algebra queries
CO2: Understand and apply Structured Query Language
CO3: Design Entity Relationship model and Understand concept of normalization
CO4: Understand and use concepts of Storage, Indexing and Hashing
CO5: Use query processing and understand the significance of query optimization
CO6: Understand the concept transaction and ACID properties

Sr. No.	Topics	Hours
	Unit – I	
1	**Introduction to DBMS and Relational Model:** Introduction, Purpose of database systems, View of data, Database languages, File system v/s Database system, Data independence, Relational databases, Database Design, Data storage and querying, Transaction management, Database architecture, Database users and administrators, Structure of relational databases, Database schema, Keys, Schema diagrams, Relational query languages, Relational operations.	8

Unit – II		
2	**Structured Query Language (SQL):** Introduction, SQL data definition, Basic structure of SQL queries, Additional basic operations, Set operations, Null values, Aggregate functions, Nested subqueries, Modification of the database, Join expressions, Views, Transactions, Integrity constraints, SQL data types and schemas, Accessing SQL from a programming language, Functions and Procedures, Triggers, Recursive queries, Advanced aggregate features, OLAP.	8
Unit – III		
3	**The Entity-Relationship (ER) Model:** Introduction to ER model, Constraints, removing redundant attributes in Entity sets, ER diagrams, Reductions to relational schemas, Issues in ER design, Extended ER features, Alternative notations for modeling. **Relational-Database Design:** Features of good relational designs, Atomic domains and first normal form, Functional Dependencies and decomposition, Functional dependency theory – Closure of attribute sets, Lossless and lossy decompositions, Algorithms for Decomposition – BCNF, 3NF, Comparison between BCNF and 3NF, 4NF, More normal forms.	7
Unit – IV		
4	**Data Storage:** Overview of physical storage Media, RAID, File organization, Organization of records in files, Data dictionary storage, Database buffer. **Indexing and Hashing:** Introduction, Ordered indices, B^+ tree index file, B^+ tree extensions, Multiple-Key access, Static hashing, Dynamic hashing, Bitmap indices, Index definition in SQL.	6
Unit – V		
5	**Query Processing and Query Optimization:** Introduction, Measures of query cost, Selection operations, Sorting, Join operation, Other operations, Evaluation of expressions, Transformation of relational expressions, Materialized views.	8
Unit – VI		
6	**Transaction Management:** Transaction concept, Simple transaction model, Storage structure, ACID properties, Serializability, Transaction isolation levels, Implementation of isolation levels, Transactions as SQL statements, locking based	8

	protocols, Timestamp based protocols, Validation based protocols, Recovery, Logging methods.	

Sr. No.	Database Management System (Practical)	Hours
1	To implement Basic SQL commands and to access & modify Data using SQL. Create and populate database using Data Definition Language (DDL) and DML Commands	4
2	Identify the case study and detailed statement of the problem. Design an Entity-Relationship (ER) / Extended Entity-Relationship (EER) Model.	2
3	Mapping ER/EER to Relational schema model.	2
4	To implement Integrity Constraints. Queries (along with sub Queries)	2
5	Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)	2
6	To implement Joins and Views.	4
7	To Perform Simple queries, string manipulation operations. Nested queries and Complex queries.	4
8	Create a simple PL/SQL program which includes the declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found) ii. Insert data into the student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.	4
9	Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers	4
10	Create a table and perform the search operation on the table using indexing and non-indexing techniques.	4
11	Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES	4
12	To implement B-trees/B+ trees and Indexing.	8
13	Case study on recent databases and applications.	16

Text book:

1. Abraham Silberschatz, Henry F. Korthand and S. Sudarshan “Database System Concepts”, McGraw Hill.

Reference books:

1. C. J. Date - “An Introduction to Database Systems”, Addison Wesley.
2. Ivan Bayross - “SQL, PL/SQL - The Programming Language of Oracle”, BPB Publications**”.**
3. Raghu Ramakrishnan and Johannes Gehrke, “Database Management Systems”, TMH.

Course objectives and Course outcomes mapping:

- To develop understanding about primary concepts of database management system and database design: CO1, CO3, CO4, CO5 and CO6
- To unfold Structured Query Language (SQL) along with its applications: CO1 and CO2

Course units and Course outcomes mapping:

Unit No.	Unit Name	Course Outcomes					
		CO1	CO2	CO3	CO4	CO5	CO6
1	Introduction to DBMS and Relational Model	✓					
2	Structured Query Language (SQL)		✓				
3	Database Design			✓			
4	Data Storage				✓		
5	Query Processing					✓	
6	Transaction Management						✓

Programme outcomes:

PO 1: Engineering knowledge: An ability to apply knowledge of mathematics, science, and engineering.

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PO 6: The engineer and society: Achieve professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.

PO 7: Environment and sustainability: Articulate a comprehensive world view that integrates diverse approaches to sustainability.

PO 8: Ethics: Identify and demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work.

PO 9: Individual and team work: An ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give/receive clear instructions.

PO 11: Project management and finance: An ability to demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: A recognition of the need for, and an ability to engage in life-long learning.

Programme outcomes and Course outcomes mapping:

Programme Outcomes	Course Outcomes					
	CO1	CO2	CO3	CO4	CO5	CO6
PO1	✓	✓	✓			
PO2	✓	✓	✓	✓		
PO3	✓	✓				
PO4						✓
PO5		✓	✓	✓	✓	
PO6						
PO7						
PO8						
PO9						
PO10			✓		✓	
PO11				✓	✓	
PO12	✓	✓	✓			✓

GOODS AND SERVICES TAX
PAYMENT RECEIPT

CPIN: **23052400330217** Deposit Date : **19/05/2023** Deposit Time : **14:04:39** e-Scroll : **NA**

Payment Particulars

CIN: **HDFC23052400330217** Name of Bank: **HDFC BANK** BRN: **R2313944010075**

Details of Taxpayer

GSTIN: **24CNTPS5967A1ZH** E-mail Id: **sXXXXXXXXXX@XXXXXXXXXin** Mobile No.: **9XXXXX7414**

Name: **SARITA NANDLAL SEVALE** Address : **XXXXXXXXXX Gujarat,394210**

Reason For Challan

Reason: **Any other payment**

Details of Deposit (All Amount in Rs.)

Government	Major Head	Minor Head

		Tax	Interest	Penalty	Fee	Others	Total
Government of India	CGST(0005)	3979	-	-	-	-	3979
	IGST(0008)	-	-	-	-	-	-
	CESS(0009)	-	-	-	-	-	-
	Sub-Total	3979	0	0	0	0	3979
Gujarat	SGST(0006)	3979	-	-	-	-	3979
Total Amount							**7958**
Total Amount (in words)							**Rupees Seven Thousand Nine hundred Fifty-Eight Only**

Mode of Payment: Internet Banking - HDFC BANK

Notes:
1. Status of the transaction can be tracked under 'Track Payment Status' at GST website
2. Payment status will be set as 'Paid' for this transaction.
3. This is a system generated receipt.

Electronic Reservation Slip (ERS)-Normal User

Booked from	Boarding At	To
VADODARA JN (BRC)	**VADODARA JN (BRC)**	SURAT (ST)
Start Date* 11-May-2023	**Departure* 17:10 11-May-2023**	Arrival* 19:02 11-May-2023

PNR	Train No./Name	Class
8303003437	12930/BL INTERCITY	SECOND SITTING (2S)
Quota	**Distance**	**Booking Date**
GENERAL (GN)	129 KM	08-May-2023 11:06:23 HRS

Passenger Details

#	Name	Age	Gender	Booking Status	Current Status
1.	RAGINI SONAWANE	25	F	CNF/D3/48/WINDOW SIDE	CNF/D3/48/WINDOW SIDE
2.	SANGITA DESALE	45	F	CNF/D3/47/NO CHOICE	CNF/D3/47/NO CHOICE

Acronyms: RLWL: REMOTE LOCATION WAITLIST PQWL: POOLED QUOTA WAITLIST RSWL: ROAD-SIDE WAITLIST

Transaction ID: 100004149635533

IR recovers only 57% of cost of travel on an average.

Payment Details

Ticket Fare	₹ 180.00
IRCTC Convenience Fee (Incl. of GST)	₹ 17.70
Travel Insurance Premium (Incl. of GST)	₹ 0.70
Total Fare (all inclusive)	₹ 198.40

PG Charges as applicable (Additional)

IRCTC Convenience Fee is charged per e-ticket irrespective of number of passengers on the ticket.

*** The printed Departure and Arrival Times are liable to change. Please Check correct departure, arrival from Railway Station Enquiry or Dial 139 or SMS RAIL to 139.**

No Linen will be provided in AC Economy (3E) class.

- This ticket is booked on a personal User ID, its sale/purchase is an offence u/s 143 of the Railways Act,1989.
- Prescribed original ID proof is required while travelling along with SMS/ VRM/ ERS otherwise will be treated as without ticket and penalized as per Railway Rules.

Indian Railways GST Details:

Invoice Number:	PS23830300343711	Address:	Indian Railways New Delhi

Supplier Information:

SAC Code:	996411	GSTIN:	07AAAGM0289C1ZL

Recipient Information:

GSTIN:	NA		
Name:	NA	Address:	
Taxable Value:	178		
CGST Rate:	2.5%	CGST Amount:	0.0
SGST/UGST Rate:	NA	SGST/UGST Amount:	NA

IGST Rate:	5.0%	IGST Amount:	0.0

Total Tax: **0.0**

Place of Supply: NA **State Name/Code of Supplier:**Delhi/DL

INSTRUCTIONS:

1. Prescribed Original ID proofs are:- Voter Identity Card / Passport / PAN Card / Driving License / Photo ID card issued by Central / State Govt. / Public Sector Undertakings of State / Central Government ,District Administrations , Municipal bodies and Panchayat Administrations which are having serial number / Student Identity Card with photograph issued by recognized School or College for their students / Nationalized Bank Passbook with photograph /Credit Cards issued by Banks with laminated photograph/Unique Identification Card "Aadhaar", m-Aadhaar, e-Aadhaar. /Passenger showing the Aadhaar/Driving Licence from the "Issued Document" section by logging into his/her DigiLocker account considered as valid proof of identity. (Documents uploaded by the user i.e. the document in "Uploaded Document" section will not be considered as a valid proof of identity).
2. PNRs having fully waitlisted status will be dropped and automatic refund of the ticket amount after deducting the applicable CLERKAGE by Railway shall be credited to the account used for payment for booking of the ticket. Passengers having fully waitlisted e-ticket are not allowed to board the train. However, the names of PARTIALLY waitlisted/confirmed and RAC ticket passenger will appear in the chart and will be allowed to board the train.
3. Passengers travelling on a fully waitlisted e-ticket will be treated as Ticketless.
4. Obtain certificate from the TTE /Conductor in case of (a) PARTIALLY waitlisted e-ticket when LESS NO. OF PASSENGERS travel, (b)A.C FAILURE, (c)TRAVEL IN LOWER CLASS. This original certificate must be sent to GGM (IT), IRCTC, Internet Ticketing Centre, IRCA Building, State Entry Road, New Delhi-110055 after filing TDR online within prescribed time for claiming refund.
5. In case, on a party e-ticket or a family e-ticket issued for travel of more than one passenger, some passengers have confirmed reservation and others are on RAC or waiting list, full refund of fare, less clerkage, shall be admissible for confirmed passengers also subject to the condition that the ticket shall be cancelled online or online TDR shall be filed for all the passengers upto thirty minutes before the scheduled departure of the train.
6. In case train is late more than 3 hours, refund is admissible as per railway refund rules only when TDR is filed by the user before the actual departure of the train at boarding station and passenger has not travelled.
7. In case of train cancellation on its entire run, full refund is granted automatically by the system. However, if the train is cancelled partially on its run or diverted and not touching boarding/destination station, passengers are required to file online TDR within 72 hours of scheduled departure of the train from passengers boarding station.
8. Never purchase e-ticket from unauthorized agents or persons using their personal IDs for commercial purposes. Such tickets are liable to be cancelled and forfeited without any refund of money, under section (143) of the Indian Railway Act 1989. List of authorized agents are available on www.irctc.co.in under 'Find NGet Agents' option.
9. For detail, Rules, Refund rules, Terms & Conditions of E-Ticketing services, Travel Insurance facility etc. Please visit www.irctc.co.in
10. While booking this ticket, you have agreed of having read the Health Protocol of Destination State of your travel. You are again advised to clearly read the Health Protocol advisory of destination state before start of your travel and follow them properly.
11. The FIR forms are available with on board ticket checking staff, train guard and train escorting RPF/GRP staff.
12. Variety of meals available in more than 1500 trains. For delivery of meal of your choice on your seat log on to www.ecatering.irctc.co.in or call 1323 Toll Free. For any suggestions/complaints related to Catering services, contact Toll Free No. 1800-111-321 (07.00 hrs to 22.00 hrs)
13. National Consumer Helpline (NCH) Toll Free Number: 1800-11-400 or 14404
14. You can book unreserved ticket from UTS APP or ATVMs (Automatic Ticket Vending Machines) located in Railway Stations.

Contact us on: - care@irctc.co.in OR 24*7 Hrs Customer Support at 14646 OR 0755-6610661, 0755-4090600

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