Shri Shankaracharya Technical Campus

Shri Shankaracharya Group of Institutions

(An Autonomous Institute affiliated to Chhattisgarh Swami Vivekanand Technical University Bhilai)

Scheme of Examination and Syllabus 2020

SCHEME OF TEACHING AND EXAMINATION (Effective from 2020 – 2021 Batch)

M.C.A. First Semester

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Period per Week			Scheme of Examination			Total Marks	Credit
							Theory/Lab				
				L	T	P	ESE	CT	TA		
1	Computer Applications	C++ Programming and Data Structure	CA261101	3	1	-	100	20	20	140	4
2	Computer Applications	Advance Data Base Management System	CA261102	3	1	-	100	20	20	140	4
3	Computer Applications	Software Engineering	CA261103	3	1	-	100	20	20	140	4
4	Applied Mathematics	Mathematical Foundation of Computer Science	CA261104	3	1	-	100	20	20	140	4
5	Humanities	Professional Communication Skills	CA261105	3	1	-	100	20	20	140	4
6	Computer Applications	C++ and Data Structure Lab	CA261191	-	-	4	75	-	25	100	2
7	Computer Applications	Data Base Management System Lab	CA261192	-	-	4	75	-	25	100	2
8	Computer Applications	Python Lab	CA261193	-	-	4	75	-	25	100	2
9		Seminar /Communication Lab	CA261194	-	-	2	-	-	-	-	-
Total Marks				**15**	**5**	**14**	**725**	**100**	**175**	**1000**	**26**

Abbreviations used: L-Lecture, T-Tutorial, P-Practical, ESE-End Semester Exam, CT- Class Test, TA-Teacher's Assessment.

Subject Code CA261101	C++ Programming and Data Structure	L = 3	T = 1	P = 0	Credits = 4
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	20	140	3 Hours

Course Objectives	Course Outcomes
1. To gain a better understanding of object-oriented design and program implementation by using object-oriented language features of C++. 2. Understand an object-oriented software development methodology 3. To master the implementation of linear data structures such as arrays linked lists etc. 4. To introduce non-linear data structures and their applications. 5. To be familiar with sorting and searching algorithms.	**CO1:**Students will be able to understand the concepts of programming designing and learn about object oriented programming concepts and features of OOPs using C++ **CO2:** Students learns about importance of Inheritance and Polymorphism. **CO3:** Students will be able to understand Linear data structures (such as arrays, linked lists, stacks, queues, priority queues. **CO4:** Student learns about concepts of Non Linear Data Structures (such as trees, graphs and their applications). **CO5:** Students will be able to write and implement various sorting and searching algorithms.

UNIT-I:Data Abstraction & Overloading: [CO1]

Overview of C++ – Structures , Class Scope and Accessing Class Members , Reference Variables , Initialization , Constructors , Destructors , Member Functions and Classes , Friend Function , Dynamic Memory Allocation , Static Class Members , Overloading: Function overloading and Operator Overloading. [**7 hrs]**

UNIT-II:Inheritance &Polymorphism:[CO2]

Base Classes and Derived Classes , Protected Members , Casting Class pointers and Member Functions , Overriding , Public, Protected and Private Inheritance , Constructors and Destructors in derived Classes , Implicit Derived , Class Object To Base , Class Object Conversion , Composition Vs. Inheritance , Virtual functions , This Pointer , Abstract Base Classes and Concrete Classes , Virtual Destructors , Dynamic Binding.[**7 hrs]**

UNIT-III:Linear Data Structures:[CO3]

Abstract Data Types (ADTs) , List ADT , array-based implementation , linked list implementation ,Singlylinked lists ,Polynomial Manipulation , Stack ADT , Queue ADT , Evaluating arithmetic expressions.[**7 hrs]**

UNIT-IV:Non-Linear Data Structures:[CO4]

Trees , Binary Trees , Binary tree representation and traversals , Application of trees: Set representation and Union-Find operations , Graph and its representations , Graph Traversals , Representation of Graphs , Breadth-first search , Depth-first search , Connected components.**[6 hrs]**

UNIT-V:Sorting And Searching:[CO5]

Searching, Hashing and Sorting: Requirement of a search algorithms; sequential search, binary search, indexed sequential search, interpolation search, Hashing- Basics, methods, collision, resolution of collision, chaining; Internal Sorting, External sorting - Selection sort, Bubble sort, Merge sort, quick sort, shell sort, heap sort. [**6hrs]**

		October2020	1.00	Applicable for
Chairman (AC)	Chairman (BoS)	Date of Release	Version	AY 2020-21 Onwards

Subject Code CA261101	C++ Programming and Data Structure	L = 3	T = 1	P = 0	Credits = 4
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	20	140	3 Hours

Text Books:

S. No.	Title	Authors	Edition	Publisher
1	Mastering C++	K.R.Venugopal, Raj Kumar and T.RaviShankar	Seventh	Oxford University Press
2	C++ How To Program	Deitel and Deitel	Fifth	Pearson Education
3	Data Structures and Algorithm Analysis in C++	Mark Allen Weiss	Third Edition	Addison Wesley

Reference Books:

S. No.	Title	Authors	Edition	Publisher
1	Programming with ANSI C++, A Step-By-Step approach	Bhushan Trivedi	Second Edition	Oxford University Press
2	Data Structures and Algorithms in C+	Goodrich, Michael T., Roberto Tamassia, David Mount	Fourth Edition	Pearson
3	Introduction to Algorithms	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein	Second Edition	McGraw Hill
4	The C++ Programming Language	Bjarne Stroustrup	Third Edition	Pearson Education

Subject Code CA261102	ADVANCE DATABASE MANAGEMENT SYSTEM	L = 3	T = 1	P = 0	Credits = 4
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	20	140	3 Hours

Course Objectives	Course Outcomes
Objective is to make students understand fundamentals of database so that they can design and implement database for an enterprise.	**CO1:-**Student will understand architecture of database and design schema for a real world problem. **CO2:-** Student will learn and implement query on database. **CO3:-** Student will learn to Normalize Database for handling redundancy. **CO4:-** Student will learn Handling of concurrent transaction on database. **CO5:-** Student will learn Fundamentals of Data warehousing and mining.

UNIT-I: Basic concepts, Database & Database Users : [CO1]

Data Models, Schemas & Instances. DBMS Architecture & Data Independence. System Architecture for DBMS Data Modeling using the Entity-Relationship Model – Entity types, Entity Sets, Attributes and Keys, Relationship, Relationship Types, Week Entity Types, Structural Constraints, Enhanced ER Model-Specialization Generalization, Constraints on Specialization Generalization. **[7hrs]**

UNIT-II: Relational Model, Languages & Systems:[CO2]

Relational Data Model Concepts and Constraints. Relational Algebra – select, project, set theoretic, join operations. Overview of Relational Calculus. Basic SQL – Structure of SQL, Basic operation, set operation nested queries. Intermediate SQL: joins, views, integrity, authorization. Advanced SQL: PL-SQL, functions, triggers, recursive query, Specifying Constraints & Indexes in SQL. Commercial DBMS - MYSQL, ORACLE, DB2, SQL server. Query processing: measuring of query cost. Overview of query optimization. **[6hrs]**

UNIT-III: Relational Data Base Design:[CO3]

Functional Dependencies &Normalization for Relational Databases. Informal design guidelines for relational schemas, Functional Dependencies. Axioms on FD, closure property on FD's. Normal forms based on primary keys, candidate key. Lossless join & Dependency preserving decomposition. Multivalued dependencies, join dependencies (4NF & 5NF), De normalization. [**7hrs]**

UNIT-IV: Transaction Management:[CO4]

Transaction: concept, atomicity, durability Isolation, serializability Transactions as SQL statements. Concurrency: Lock Based protocol, deadlock handling, Time stamp based protocol, Weak level of consistency, Advance topic in concurrency. Recovery and atomicity, Recovery algorithm, remote backup. **[7hrs]**

UNIT-V: Advanced topics: [CO5]

Big data: storage system, Map reduce paradigm, data warehousing, data mining, advance indexing techniques, advance application development, block chain databases. Database system architectures: Centralised, parallel, distributed, cloud database. [**6 hrs]**

Subject Code CA261102	ADVANCE DATABASE MANAGEMENT SYSTEM	L = 3	T = 1	P = 0	Credits = 4
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	20	140	3 Hours

Text Books:

S. No.	Title	Authors	Edition	Publisher
1	Database System Concepts	H.Korth& A. Silberschatz	7th Edition	Tata Mcgraw Hill
2	Fundamental of Database System	Elmsari and Navathe	Fourth	Addison Wesley

Reference Books:

S. No.	Title	Authors	Edition	Publisher
1	An Introduction to Database System	Date. CJ	Second	Narosa Publishing House
2	An Introduction to Database Concepts	Desai B	Fourth	Galgotia Publications

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Scheme of Examination and Syllabus 2020

MCA 1st Semester

Subject Code CA261103	Software Engineering	L = 3	T = 1	P = 0	Credits = 4
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	20	140	3 Hours

Course Objectives	Course Outcomes
1.To introduce to the students the complexities of large projects, the challenges associated with it and the processes involved in their development and how software engineering alleviates these problems 2.To introduce to the students the importance of good requirement analysis and the formal way of documenting it 3.To train the students to use formal methods for project management and tools for designing systems 4.To teach the students the formal methods used for Testing systems 5. To familiarize the students about Software Reengineering Process.	**CO1:** Student have a fair idea about the importance of using software engineering principles in real life projects and to pick an appropriate software development model for developing systems **CO2**: Student will be able to prepare software requirement sheet for a real life project, keeping in mind the properties of an SRS document and able to use mathematical models for calculating the size, cost and duration of real life projects **CO3:** Student will be able to design objected oriented structure of real time applications. **CO4:** Student will be able to test the developed system using different testing techniques **CO5:** Student will be able to know the methods to apply Software Reengineering Process to existing software.

UNIT I Introduction: [CO1]

The Software And Software Engineering Problem, Approach And Goals Of Software Engineering. Software Processes And Models: Processes, Projects And Products, Component Software Processes, Characteristics Of A Software Process, Software Development Process, Project Management Process, Software Configuration Management Process. Models: Linear Sequential, Prototyping, RAD,Incremental, Spiral, Winwin Spiral, Concurrent Development Model.**[7 hrs]**

UNIT II Software requirement Analysis and Specification: [CO2]

Software requirement, Feasibility study, need for SRS, Characteristics and component of SRS, specification languages, structured analysis, object oriented modeling, Requirement analysis, DFD, Structure of a requirement document, validation of SRS, requirement reviews, Cost estimation, uncertainties in cost estimation, building cost estimation. Size estimation: - COCOMO model. **[7 hrs]**

UNIT III Function Oriented design: [CO3]

Design principles, coupling, cohesion, design notation and specification,structured design technology, verification.Object Oriented Design : Overview of Object oriented design,UML diagram, Use CASE diagram, class diagram, interaction diagram (Sequence and collaboration diagram), Activity diagram. **[6 hrs]**

UNIT IV Software Testing techniques and strategies: [CO4]

Software testing objectives & principles, test case design, white box testing, black box testing: A Strategic Approach to software testing, strategic issues, unit, integration testing, validation testing, system testing, object oriented program testing, debugging. **[7 hrs]**

UNIT V Software Re-engineering: [CO5]

Software reengineering, software maintenance, a software reengineering process model, reverse engineering, restructuring code, data restructuring, forward engineering, the economics of reengineering.**Computer Aided software Engineering:** What is CASE, building blocks for CASE, taxonomy of CASE tools, integrated CASE environment, the integration architecture, the case repository.**Component Based Software Engineering:** CBSE process, domain engineering, Component based development, economics of CBSE. **[6 hrs]**

		October 2020	1.00	Applicable for
Chairman (AC)	Chairman (BoS)	Date of Release	Version	AY 2020-21 Onwards

Subject Code CA261103	**Software Engineering**	**L = 3**	**T = 1**	**P = 0**	**Credits = 4**
Evaluation Scheme	**ESE**	**CT**	**TA**	**Total**	**ESE Duration**
	100	**20**	**20**	**140**	**3 Hours**

Text Books:

S. No.	**Title**	**Authors**	**Edition**	**Publisher**
1)	Software Engineering: A Practitioner's Approach	Pressman Roger	3rd	TMH, Delhi.
2)	An Integrated Approach to Software Engineering,	Jalote Pankaj	5th	Narosa, Delhi.

Reference Books:

S. No.	**Title**	**Authors**	**Edition**	**Publisher**
1)	Software Engineering Concepts	R.E. Fairly		McGraw Hill, Inc 1985
2)	Fundamental of Software Engineering	Rajib Mall	3rd	PHI

Subject Code CA261104	Mathematical Foundation of Computer Science	L = 3	T = 1	P = 0	Credits = 4
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	20	140	3 Hours

Course Objectives	Course Outcomes
1. To introduce the logical structure of statement, Boolean algebra and its valid applications. 2. To familiarize the students with concepts of relations and functions. 3. To impart the knowledge of concepts of sets and grammars 4. To introduce the concepts of graphs and their matrix representation. 5. To give an insight of the basic concepts of Graph theory and its application in coding.	**CO1:** Able to apply mathematical logic and Boolean algebra in switching circuits & logic circuits. **CO2:** Able to determine the type of a relation and apply the knowledge using Hass diagram. **CO3:** Familiar with set theory and recursive function. Also, they will construct the grammars. **CO4:** Familiar with graph theory and its applicability in various computer applications. **CO5:** Able to solve problems in various fields in computer application using the basic concepts of group theory and coding.

Unit-IMathematical Logic & Boolean Algebra: [CO1]
Statements & Notations, Connectives, Basic concepts of Boolean Algebra, Properties, Boolean functions (Conjunctive normal form and Disjunctive normal form), Applications of Boolean Algebra (Switching Circuits and Logic circuits).**[7 Hrs]**

Unit-II Ordered Structures, Relations & Functions:[CO2]
Tuples, Lists, Strings & Languages, Numerals, Relations, Properties of Relations, Partial order Relation, Lattices. Functions, Properties of Functions, Composition of Functions, The map function & some useful functions.**[7 Hrs]**

Unit-III Construction Techniques & Grammars:[CO3]
Inductively defined sets, Numbers, Strings, Lists, Cartesian product of sets, Recursive functions and Procedures, Grammars.**[6 Hrs]**

Unit-IV Graph Theory:[CO4]
Basic concepts of Graph Theory, Types of graphs, Paths and Circuits, shortest path problems, Trees, Binary Trees, Spanning tree and minimum spanning tree, Matrix Representation of Graphs(Directed and Undirected). **[7 Hrs]**

Unit-V Group Theory & Coding:[CO5]
Basic concepts of Group Theory, Subgroups, Homomorphism & Isomorphism of Groups, Cosets and Langrage's Theorem, Elements of Coding Theory, Group codes, Decoding.**[6 Hrs]**

Subject Code CA261104	**Mathematical Foundation of Computer Science**	**L = 3**	**T = 1**	**P = 0**	**Credits = 4**
Evaluation Scheme	**ESE**	**CT**	**TA**	**Total**	**ESE Duration**
	100	**20**	**20**	**140**	**3 Hours**

Text Books:

S. No.	**Title**	**Authors**	**Edition**	**Publisher**
1)	Graph Theory with Applications to Engineering & Computer Science.	N .Deo	1ST Ed.	Prentice Hall. 2004
2)	Elements of Discrete Mathematics.	Liu, C.L	2nd edition	Tata McG raw Hill,

Reference Books:

S. No.	**Title**	**Authors**	**Edition**	**Publisher**
1)	Discrete and Combinatorial Mathematics.	Ralph, Grimaldi	5th edition	Pearson Education
2)	Discrete Mathematical Structures.	Kolman, B, Busby, R.C.Ross		Pearson Education, 2006.

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Scheme of Examination and Syllabus 2020

MCA 1st Semester

Subject Code CA261105	Professional Communication Skills	L = 3	T = 1	P = 0	Credits = 4
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	20	140	3 Hours

Course Objectives	Course Outcomes
1. To introduce the students to the basics of communication and its importance. 2. To enable the students to correspond effectively through letters and handle correspondence. 3. To help students prepare technical and non-technical reports. 4. To help students learn about interpersonal communication and to prepare them to perform well in interviews. 5. To help students how to write grammatically correct English.	**CO1:** Able to understand the basics of communication, barriers to communication and how to overcome them. **CO2**: Able to correspond clearly and learn to handle correspondence and able to respond to job advertisements and write resume. **CO3:** Able to write reports in the correct format and able to know how to prepare and present technical and non-technical proposals. **CO4:** Able to write notice, agenda and minutes related to meetings and also able to learn how to prepare and face interviews. **CO5:** Able to write grammatically correct English.

UNIT – I Communication: [CO1]

Definition, Process, Elements, Objectives of Communication, Different Medias of Communication, Verbal and Non-verbal Communication, Principles of communication, Barriers to Communication and How to overcome them, Communication in an Organization : Listening-Introduction, Advantages and Importance, Barriers in effective listening, How to become a good listener.**[7 hrs]**

UNIT – II Letter Writing: [CO2]

Types of letters, Elements of letters, Styles of letter writing, Basics of official correspondence, Preparation of Resume and job application, Quotation, Orders, Sales letter, Tender, Handling correspondence, Advertising and job description. **[7 hrs]**

UNIT – III Types of Report: [CO3]

Characteristics of report, Elements of report, Preparation and writing of report, Use of illustrations in reports, Technical report writing, Preparation of Bibliography and References, Note taking and Note making. **[6 hrs]**

UNIT – IV Precise writing: [CO4]

Meetings (Notice, Agenda and Minutes writing techniques) Preparation for Presentation, Conferences and Seminars, Interviews, Techniques of effective speech and interpersonal communication, Business and Technical proposals. **[7 hrs]**

UNIT – V Grammar: [CO5]

Comprehension of unseen passage, Determiners, Subject, Verb, Concord, Tenses, Question Tags, Voice, Narration, Preposition, Correction of sentences, Paragraph writing. **[6 hrs]**

Subject Code CA261105	Professional Communication Skills	**L = 3**	**T = 1**	**P = 0**	**Credits = 4**
Evaluation Scheme	**ESE**	**CT**	**TA**	**Total**	**ESE Duration**
	100	**20**	**20**	**140**	**3 Hours**

Text Books:

S. No.	**Title**	**Authors**	**Edition**	**Publisher**
1)	Business Correspondence and Report Writing	RC Sharma and Krishna Mohan		Tata McGraw-Hill 2005
2)	Developing Communication Skills	Krishna Mohan and Meera Banerjee		McMillan India Ltd.New Delhi, 2000.

Reference Books:

S. No.	**Title**	**Authors**	**Edition**	**Publisher**
1)	Essentials of Business Communication	Rajjendra Pal and J S Korlahalli,		Sultan Chand and Sons ,2005
2)	Effective Technical Communication	M Ashraf Rizvi , Tata McGraw		Hill Company Limited New Delhi,2005

Subject Code CA261191	C++ Programming and Data Structure Lab	L =0	T = 0	P = 4	Credits = 2
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	75	-	25	100	-

Course Objectives	Course Outcomes
1. To understand basic concepts of Problem solving skills and techniques of algorithm. 2. To gain a better understanding of object-oriented design and program implementation by using object-oriented language features of C++. 3. To familiarize student with syntax and implementation of Linear Data Structure. 4. To make students understand concept of Linked List and sorting searching.	**CO1:** Students learn about object oriented programming concepts and features of OOPs by implementing using C++ **CO2:** Student gain experience for handling interrupts and working with files. **CO3:** Students will be able to implement programs related with arrays, Stack, Queue. **CO4:** Students will be able to deal with programs related to Linked List, Sorting and Searching.

Module 1: Understanding object oriented programming concepts and features of OOPs using C++ [CO 1]

1. Write a program which will show the order of execution of constructor, destructor, static data member, static function and member functions.
2. A book shop maintains the inventory of books that one being sold at the shop. He list includes details such as authors, title, price, publisher and stock position. Whenever a customer wants a book, the sales person input the title and author and the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed. If it is then the system displays the book details and requests for the number of copies required.
3. Create class Distance having private data feet(type integer), inches(type float) and function getdist() and showdist() . Overload + operator to add two distance values and > operator to compare them.
4. Create a class called employee containing protected data name(20 characters), employee number(long integer). Also write its constructor and destructor functions. Create two derived classes called hourly _employee containing private data rate and hours and salary_ employee containing basic salary and allowances as data members. The class employee is inherited as public by these derived classes. Write appropriate functions in each class to calculate total salary of each employee and to display name, number and total salary.
5. Create a class dimension containing three float type data and a constructor to accept values, also declare a pure virtual function area() in it. Now create three derived classes rectangle, square and triangle, each inheriting dimension as public. Define corresponding constructors and redefine virtual function area() in each to give area of respective figure. A main() program should create suitable objects to implement this inheritance.

Subject Code CA261191	C++ Programming and Data Structure Lab	L =0	T = 0	P = 4	Credits = 2
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	75	-	25	100	-

6. Create a class STRING that contains a character array as a data member. Overload + and = operators respectively to concatenate and compare strings.
7. Create two classes DM and DB respectively represent the distance in meters, centimeters and distance in feet, inches. Write a program that can read values for the class objects and add one object DM with another object of DB. Use a friend function to carry out the addition operation. The object that stores the results may be a DM object or DB object depending on the units in which the results are required. The display should be in the format of feet and inches or meters and centimeters depending on the object on display.
8. Write a program to define a class 2DPoint that represents a point in a 2D plane by its x and y coordinates. The class will contain constructors and member function distance() that can calculate the distance between the point to any other point in the plane. Drive a new class 3DPoint from the class 2DPoint that will add a new member, the z coordinate. Override the function distance() that calculate the distance between two points in the space.

MODULE 2: Handling exceptions, working with command line arguments, and working with files (text and binary) [CO 2]

9. Write a program containing a possible exception. Use a try block to throw it and a catch block to handle it properly.
10. Write a program that will take a two file names from the command line and transfer the contents of first file into the second. (Command line arguments)
11. Write a program to read the contents of a text file and count the number of words present in the file.
12. Write a program that reads a text file and creates another file that is identical except that every sequence of consecutive blank spaces is replaced by single space.
13. Write a program that will ask the users to enter the details of 5 students and transfer those details into a binary file Stud.dat. Write another file that will read the details of the students and print the names of all those students who have total marks greater that a particular given value. (Demonstrate this using malloc and new/delete operators.

MODULE-3 Array, Stack, Queue: [CO 3]

14. Write a program to implement a stack and its operations.
15. Write a program to implement a linear queue using an array.
16. Write a program to convert an infix expression into its equivalent postfix expression using a stack.
17. Write a program to evaluate a postfix expression using as stack

MODULE-4 Linked List, Sorting and Searching: [CO 4]

Subject Code CA261191	C++ Programming and Data Structure Lab	L =0	T = 0	P = 4	Credits = 2
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	75	-	25	100	-

18.Write a program to create and display a linked list of integers

19.Write a program to create a linked list and define functions to add a node

20. Write a program to create two linked list and append one list at the end of another using function.

21. Write a program to implement a stack and queue of strings using a linked list.

22. Write a program to implement a priority queue using linked list.

23. Write a program to implement a priority queue using linked list.

24. Write a program to create and display a circular linked list of integers.

25. Write a program to define functions to add a node .

26. Write a program to implement a circular queue over a circular linked list.

27. Write a program to create and display a doubly linked list.

28. Write programs to sort an array of integers using the techniques of Selection sort, Bubble sort, Insertion sort, Quick sort, Shell sort, Heap sort.

29. Write a program to search for a particular element in an unsorted array of integers using linear search technique.

30. Write a program to demonstrate the technique of Binary search on a sorted array of integers.

Subject Code CA261191	C++ Programming and Data Structure Lab	L =0	T = 0	P = 4	Credits = 2
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	75	-	25	100	-

Text Books:

S. No.	Title	Authors	Edition	Publisher
1	Mastering C++,	K.R.Venugopal, Raj Kumar and T.RaviShankar	-	TMH.
2	C++ Complete reference	H. Schildt		TMH
3	Data Structures and Program Design in C	Kruse R L, Alexander J. Ryba	-	Prentice Hall
4	Data Structures using C and C++	Tanenbaum	-	Prentice Hall

Reference Books:

S. No.	Title	Authors	Edition	Publisher
1	Object Oriented Programming with C++	Balaguruswami	6th	TMH
2	Object Oriented Programming in Turbo C++	Robert Lafore	4th	Galgotia Pub
3	Data Structures with C (Schaum's Outline Series)	Lipschutz Seymour	-	Tata McGraw-Hill Education India
4	Data Structures using C	Balaguruswami	-	Tata McGraw-Hill Education India

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Scheme of Examination and Syllabus 2020

MCA 1st Semester

Subject Code CA261192	Data Base Management System Lab	L =0	T = 0	P = 4	Credits = 2
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	75	-	25	100	-

Course Objectives	Course Outcomes
1. To understand basic concepts and syntax Data handling languages, Keys, Joins queries using SQL. 2. To familiarize student with syntax of PL using functions, Procedures. 3. To make students understand Cursor and Triggers.	**CO1:** Students will be able to design query related to DML, DCL, DDL, Assigning Keys and joins. **CO2:** Students will be able to implement PL using function and procedures. **CO3:** Students are expected to design cursor and triggers.

Module1-Structured Query Languages : [CO1]

1. Design and manage table using DML, DDL and DCL commands. Perform select query to work on EMP and DEPT table of scott/tiger log in.
2. Query to implement primary and foreign key concept.
3. Retrieval of Database - select: where, distinct, in, between-and, like, is null, group by-having, order by, column: (format, heading, justify, wrap trunc), nested queries: (any, all, in, not in, exists).
4. Query to demonstrate inner outer and full join.
5. Views (create, update, drop), sequences (create, alter, drop), synonyms(create, drop), index(create, drop)
6. Transaction control (commit, rollback, save point)
7. Data control (grant, revoke)

Module 2-Programming Language/SQL-Functions, Procedures : [CO2]

8. Write a PL/SQL code to find whether the entered number is odd or even.
9. Write a PL/SQL code to generate multiplication table.
10. Write a PL/SQL code to find largest of 3 numbers.
11. Write a PL/SQL code to compute the factorial & a given number.
12. Write procedure to display any word and display it n number of times.

Module 3-Cursors& Triggers [CO3]

13. Create a salary table with attributions Empno, Ename, Grade,Gross Salary & write a explicit cursor to display emp number & grade of salary table.
14. WAP of implicit cursors to update any record of salary table.
15. WAP of explicit cursor displaying emp no& grade of salary table.

		October 2020	1.00	Applicable for
Chairman (AC)	Chairman (BoS)	Date of Release	Version	AY 2020-21 Onwards

Subject Code CA261192	Data Base Management System Lab	L =0	T = 0	P = 4	Credits = 2
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	75	-	25	100	-

16. More on Triggers.

Text Books:

S. No.	Title	Authors	Edition	Publisher
1	Oracle PL/SQL programming	Steven Feuerstein	6th	-
2	Oracle Database and PL/SQL Programming	Michael McLaughlin	Indian Edition	Oracle Press

Reference Books:

S. No.	Title	Authors	Edition	Publisher
1	Oracle8 PL/SQL programming	Scott Urman	2nd	McGraw-Hill

Subject Code CA261193	Python lab	L =0	T = 0	P = 4	Credits = 2
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	75	-	25	100	-

Course Objectives	Course Outcomes
1. To understand basic concepts of python, Conditions & branching, String operations. 2. To familiarize student with syntax and implementation of Tuples and Dictionary. 3. To make students understand Objects &Classes. 4. To provide detailed knowledge Data Handling with Pandas.	**CO1:** Students will be able to design concepts of python, String operations. **CO2:** Students will be able to implement program related to tuples and dictionary. **CO3:** Students are expected to design program related to objects and classes. **CO4:** Students will be able to design good Data handling program in Pandas.

Module1-Python basic, Data types, Typecasting, Data type conversions, String operations, Slicing, Stride, String Methods. Python programming fundamentals-conditions & Branching.:[CO1]

1. Input a welcome message and display it.
2. Input two numbers and display the larger / smaller number.
3. Input three numbers and display the largest / smallest number.
4. Determine whether a number is a perfect number, an Armstrong number or a palindrome.
5. Input a number and check if the number is a prime or composite number.
6. Count and display the number of vowels, consonants, uppercase, lowercase characters in string.
7. Input a string and determine whether it is a palindrome or not; convert the case of characters in a string.

Module 2- Tuple, Lists, Set, Dictionaries- Tuple indexing, Slicing, Nesting, List indexing, List functions-extend, append, delete, split. List Aliasing, List Clone. Set –creating set, Set Operations. Dictionaries.: [CO2]

8. Find the largest/smallest number in a list/tuple
9. Input a list of numbers and swap elements at the even location with the elements at the odd location.
10. Input a list/tuple of elements, search for a given element in the list/tuple.
11. Input a list of numbers and test if a number is equal to the sum of the cubes of its digits. Find the smallest and largest such number from the given list of numbers.
12. Create a dictionary with the roll number, name and marks of n students in a class and display the names of students who have marks above 75.
13. To print the highest and lowest values in the dictionary.

Module 3-Objects and classes, working with Data in Python-Reading files, writing files, Copying file.: [CO3]

14. Read a text file line by line and display each word separated by #. Read a text file and display the number of vowels/ consonants/ uppercase/ lowercase characters in the file.
15. Create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message.
16. Create a binary file with roll number, name and marks. Input a roll number and update the marks.
17. Remove all the lines that contain the character `a' in a file and write it to another file.

Subject Code CA261193	Python lab	L =0	T = 0	P = 4	Credits = 2
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	75	-	25	100	-

Module-4 Data Handling with Pandas:[CO4]

18. Create a panda's series from a dictionary of values and array
19. Given a Series, print all the elements that are above the 75th percentile.
20. Create Data Frame quarterly sales where each row contains the item category, item name, and expenditure. Group the rows by the category and print the total expenditure per category.
21. Create a data frame for examination result and display row labels, column labels data types of each column and the dimensions
22. Filter out rows based on different criteria such as duplicate rows. 6. Importing and exporting data between pandas and CSV file.

Text Books:

S. No.	Title	Authors	Edition	Publisher
1	Python Programming	Anurag Gupta,G P Biswas	-	Mc Graw Hill
2	Complete Reference Python	Martin C. Brown	Indian Edition	Mc Graw Hill
2	Python Programming for absolute beginners	Michal Dawson	3rd	

Reference Books:

S. No.	Title	Authors	Edition	Publisher
1	Python for beginners	Harsh Bhasin	1st	New Age International Publisher
2.	Python for beginners	Prof.Rahuk,E.Borate Dr. Sunil Khilari Prof. Rahul S Navale	1st	Shroff/X-Team

Subject Code CA261194	Communication Lab	L = 0	T = 0	P = 2	Credits = 0
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
			20	20	

Course Objectives	Course Outcomes
1. To improve the student's confidence and fluency, through Situational talks, Role plays and Audio-visuals 2. To sharpen Group Discussions Skills, Interviews Skills and Presentation Skills 3. To improve Listening, Reading, Writing and Speaking Skills 4. To develop Pronunciation Skills	**CO1:**- Learn and practice Listening and Reading skills. **CO2:**- Improve the student's confidence and fluency and able to successfully Participate in GDs and improve their Interview Skills. **CO3:**- Develop proficiency in English writing skills. **CO4:**- skilled on vocabulary building spoken, presentation Skills and Speaking Skills.

Module-I Exercises on Listening and Reading :[CO1]

1. **Listening**: Exercises based on audio materials like DVDs, audio tapes. Listening to Song. Practice and exercises on Listening Comprehension.

2. **Reading:** Speed Reading, Reading with the help of Audio Visual Aids, Reading Comprehension Skills. Practice and exercises on Reading Comprehension.

Module- II Improve the student's confidence and fluency :[CO2]

1. Mock interview and Debate/Group Discussion: Its concepts, types, Do's and Don'ts- intensive practice.
2. Just a Minute (JAM Sessions)
3. Situational Dialogues (Role Play)
4. Extempore and Debate

Module-III Developing Writing Skills: [CO3]

Letter writing, CV writing, Attending a meeting and Minute Preparation, Writing Articles on current topics

Module IV – Vocabulary Building Spoken: [CO4]

1. Elementary Phonetics (Speech Mechanism. The Description of Speech Sounds, The Phoneme the syllable; Intonation and Word Accent), MMFS (Multimedia Feedback System), Mirroring, Elevator Pitch, telephone etiquette, qualities of a good presentation with emphasis on body language and use of visual aids.
2. Preparation of transparencies, slides, power point presentation
3. Paper presentation