

VIDHYADEEP UNIVERSITY

Syllabus for F.Y. B.C.A. (Sem-I and Sem-II)To

be implemented from

Academic Year: June, 2022-2023

: Submitted By:

BCA Department

Bachelor of Computer Application (B.C.A.)

Name of Program:	Bachelor of Computer Application
Abbreviation:	B.C.A.
Duration:	3 Years (Regular)
Eligibility:	Candidate must have passed standard 12th (H.S.C.) Examination in Science (Any Group) / Commerce / vocational / General stream through Gujarat Higher Secondary Board (G.H.S.E.B.) or any other equivalent board (C.B.S.E. / I.C.S.E. etc. which must be approved and possess equivalence certificate from Vidhyadeep University) with English as one of the subject. In case of candidates passed out from 12th (H.S.C.) General Stream, Statistics/Economics/Business Mathematics must be one of the subjects. In case of Students passed out with 12th (H.S.C.) vocational stream, Computer and English must be one of the subject.
Objective of the Program:	Objective of the program is to open a channel of admission for courses in Computer Science for students who have completed standard 12th (H.S.C.) and are interested in taking computing/IT as a career. The program caters to the needs of the students aspiring to excel in the field of computer science. The program is designed to develop computer professionals versatile in almost all field of computer application. The main emphasis of the course is an applied computer use in various fields.
Program Outcome:	It will prepare the aspiring students to become computer programmers who can work in companies at entry level and can also work independently.
Medium of Instruction:	English
Program Structure:	Semester-wise Breakup of the course is given as follows:

**Program Structure: F.Y.B.C.A. (SEM – I and SEM - II)(Academic
Year June, 2022 – 2023)**

Course Code	Title	Teaching Per Week (Credit/Hours)		Course Credits	University Examination		Internal Marks	Total Marks
		Theory	Practical		Duration	Marks		
1141101	Communicative English	2	0	02	3 Hours	60	40	100
1142102	Principle of Mathematics	3	0	03	3 Hours	60	40	100
1142103	Fundamental of Computers	4	0	04	3 Hours	60	40	100
1142104	Introduction to Programming using C	4	0	04	3 Hours	60	40	100
1142105	Data Management	4	0	04	3 Hours	60	40	100
1145106	Introduction to Programming using C Practical	-	6	06	2 Hours	60	40	100
1145107	Data Management Practical	-	6	06	2Hours	60	40	100
	Foundation Elective (to be selected from NCC / NSS / Saptadhara)	0	0	02				
Total				31		420	280	700

Course Code	Title	Teaching Per Week (Credit/Hours)		Course Credits	University Examination		Internal Marks	Total Marks
		Theory Hours	Practical Hours		Duration	Marks		
1141201	Mathematical Statistics	2	0	2	3 Hours	60	40	100
1141202	Introduction to Internet & HTML	3	0	3	3 Hours	60	40	100
1142203	Operating System	4	0	4	3 Hours	60	40	100
1142204	Programming Skills with Python	4	0	4	3 Hours	60	40	100
1145205	Relational Database Management System	4	0	4	3 Hours	60	40	100
1145206	Programming Skills with Python Practical	0	06	06	2 Hours	60	40	100
1145207	Relational Database Management System Practical	0	06	06	2 hours	60	40	100
	Foundation Elective (to	0	0	02				

	be selected from NCC / NSS / Saptadhara							
Total				31		420	280	700
	<p>For Practical: (Batch Size –30 Maximum) :</p> <p>1.In case of more than 10 students in a batch, separate batch shouldbe considered</p> <p>2.The journal should be certified by the concerned faculty and also by the Head of the Department,failing which the student should not be allowed to appear for the External Practical Examination.</p> <p>Programming passing rules: As per University rules.</p>							

F.Y.B.C.A. (SEM - II)

Academic Year of Implementation: 2022-2023

Subject Course 1141201: Mathematical Statistics

Subject Code: 1141201	Total Credit: 2
Subject : Mathematical Statistics	

Unit	Description in detail	Weighting (%)
I	Introduction and Presentation of statistical data 1.1. Types of variables 1.2. Univariate, bivariate and multivariate data 1.3. Univariate and bivariate frequency distributions	20%
II	Measure of central tendency-mean, median and Mode 2.1. types of mean 2.1.1. Arithmetic Mean 2.1.2. Geometric Mean 2.1.3. Harmonic mean 2.2 Concept of Median 2.3 concept of Mode	20%
III	Measures of dispersion (absolute as well as relative) 3.1. Mean deviation 3.2. Standard deviation 3.3. Coefficient of mean deviation and coefficient of variation	20%
IV	Correlation 4.1. Introduction 4.2. Types of correlation and scatter diagrams 4.3. Rank correlation coefficient	20%
V	Regression 5.1. Concept of dependent and independent variables 5.2. Introduction to liner regression 5.3. Line of regression (with one independent variable)	20%

Reference Books:	<ol style="list-style-type: none">1. Introduction to mathematical statistics, Hogg R V & Craig AL - Tata McGraw Hill2. An introduction to the theory of statistics, Yule U G & KendallMG – C. Griffin & Co.3. Statistical Methods, S. P. Gupta – Sultan Chand & Co
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Course: 1141201 – Mathematical Statistics

Subject Code:	1141201
Subject Title:	Mathematical Statistics
Total Credits :	2 Credits
Nature of Subject :	Theory only
Teaching per Week:	2 Hours per week per Semester
Minimum weeks per Semester:	15 weeks (Including class work, examination, preparation etc.)
Review/Revision Year:	June 2022-2023
Purpose of Course :	To develop statistical problems solving abilities relevant to Computer Science.
Course Objective :	<ol style="list-style-type: none">1. To make students understand various statistical methods.2. To develop the ability to compute descriptive statistics including diagrammatic representation and interpretation.3. To be able to carry out simple linear regression analysis.
Pre-requisite:	None
Course Out come	Ability to use computers to analyze data.

Course-1141202: Introduction to Internet & HTML

Subject Code: 1141202	Total Credit: 3
Subject : Introduction to Internet & HTML	

Unit	Description in detail	Weighting (%)
I	1. Introduction to Internet 1.1 Concepts of Internet 1.1.1 Introduction to Internet 1.1.2 Evolution of Internet 1.1.3 Internet Services 1.1.4 Advantages and Disadvantages of Internet 1.2 Internet Connections 1.2.1 Type of Internet Connection (dial-up connection, Leased connection, Broad band connection, wi-fi, mobile broadband, Mobile Hotspot, Cable model connection) 1.2.2 Working of Internet 1.2.3 Difference between Internet, Intranet, Extranet	20%
II	2. World Wide Web 2.1 Introduction to WWW 2.2 WWW Architecture 2.3 Introduction to Internet Protocols (TCP,IP, UDP, FTP, HTTP, (Only Introduction and their purpose)) 2.4 ISP (Internet Service Provider) 2.5 Applications of Internet 2.5.1 Search Engine, Web Server, News Group 2.5.2 E-mail, E-Learning, E-Banking, E-Governance 2.5.3 Social Networking, Instant Messaging, IRC, Audio and Video Conferencing	20%
III	3. Internet Security and Privacy 3.1 Internet Security Overview 3.2 Data Encryption 3.2.1 Symmetric Key Encryption 3.2.2 Public Key Encryption 3.3 Concepts of Digital Signature 3.4 Concepts about Firewall Security	20%
IV	4. HTML & Structure Web Page 4.1 Introduction to HTML 4.1.1 HTML introduction 4.1.2 Structure of HTML page 4.1.3 HTML Comments 4.2 HTML Elements (<h1>...<h6>, <p>, , <a>,) 4.3 HTML Attributes (alt, href, src, width, height, style, title, id) 4.4 HTML Headings (<head>) 4.5 Text Formatting Tags(, ,<i>,,<mark>,<small>,,<ins>,<sub>,<sup>)	20%
V	5. Structuring Web Page using HTML 5.1 Tables 5.1.1 Table height and width 5.1.2 Table Caption	20%

5.1.3 Cell padding and Cell Spacing 5.1.4 Column Span Row Span 5.2 Links and bookmarks 5.3 Forms 5.3.1 Form Attributes 5.3.2 Form Controls (Text Input, Select Box, Submit and Reset Button)	
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Reference Books	<ol style="list-style-type: none"> 1. E-Commerce : An Indian Perspective, 3rd Edition – Joseph PHI 2. Frontiers of Electronic Commerce : Kalakota and Whinstn Addition Wesley 3. Computer Fundamentals : Pradeep K. Sinha & Priti Sinha (BPB) 4. Fundamentals of Computers : V. Rajaraman
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Course: 1141202 - Introduction to Internet & HTML

Subject Code:	1141202
Subject Title:	Introduction to Internet & HTML
Total Credits :	2 Credits
Nature of Subject :	Theory only
Teaching per Week:	2 Hours per week per Semester
Minimum weeks per Semester:	15 weeks (Including class work, examination, preparation etc.)
Review/Revision Year:	June 2022-2023
Purpose of Course :	<ul style="list-style-type: none"> - Internet is the global System of interconnected Computer Networks to interconnect with each device. - Internet involves functionalities and facilities such as Global Communication, Global Information Sharing, World Wide Services, understating of how it works and established to work on with is become essential to study. - The Study of securing Internet is become essential to make secure connections and securing private and confidential Data over the Network. - The technology used to create website which is platform for any users to interact with the Internet is also needed to learn.
Objective :	Objective of this course is to introduce essentials of Internet, www, HTML Language and related terminologies used to create website.
Pre-requisite:	None
Course Outcome :	<ul style="list-style-type: none"> - Students will be able to understand concept of Internet and WWW - Understand about Connections Establishment to make use of Internet. - Students will be able to understand fundamentals of developing website using HTML Technology.

Course 1142203: Operating System

Subject Code: 1142203	Total Credit: 4
Subject: Operating System	

Unit	Description in detail	Weighting (%)
I	Operating System Concepts 1.1.Evolution of Operating System & History 1.2.Need of an Operating System 1.3.Single User & Multi User Operating System 1.4.Elements of an Operating System 1.5.Operating System as a Resource Manager 1.6 Introduction to File System 1.6.1.File Concept 1.7.Operations on File 1.8 File Access Methods (Sequential Access and Direct Access) 1.9 Directory Systems File Management Functions. 1.10 File System and Directory Structure organization. 1.11 File Protection	20%
II	2. Concept of Processes Management 2.1 Process Concept 2.2 Process Scheduling 2.3 Scheduling Criteria 2.4 Scheduling Algorithms 2.5 Fundamental of Process Synchronization 2.6 Critical Section Problem 2.7 Producer / Consumer Problem 2.8 Semaphores 2.9 Monitors 2.10 Inter Process Communication 2.11 Classical IPC Problems 2.11.1 The Dining Philosopher 2.11.2 The Sleeping Barber Problem	20%
III	3. Concept of Memory Management 3.1 Memory Management Functions 3.2 Contiguous Memory Allocation 3.2.1 Partitioned Memory 3.2.2 Static and Dynamic Allocation 3.3 Non-Contiguous Memory Allocation 3.3.1 Paging 3.3.2 Segmentation	20%
V	Introduction of Linux Operating System 4.1.Introduction of Linux versions 4.2.Components of Linux 4.3.Comparison of Windows and Linux 4.4 Installing Linux 4.5 Installation of Open Source Software 4.6 Maintaining User Accounts 4.7 System Config Services (Package)	20%

V	Device Organization 5.1.Device Management Function 5.2.Device Characteristics 5.3.Disk space Management 5.4.Allocation and Disk Scheduling Methods	20%
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Reference Books	<ol style="list-style-type: none"> 1. Operating System Concepts: – James Peterson: – McGrawHill 2. Operating System: – Stallings - PHI 3. Operating System Principles: – Silberschatz, Galvin, Gagne - Willey, India 4. Operating Systems – A. S. Godbole – Tata McGraw Hill 5. Linux – The Complete Reference – Richard Petersen – Tata McGraw Hill 6. Operating System Concepts, Silberschatz, Addition Wesley 7. Operating Systems: Internals & Design Principles, William Stallings, PHI 8. Operating System: Design & Implementation, Tenenbaum & Albert Woodhull, Pearson 9. Modern Operating Systems, Andrew S. Tenenbaum, PHI 10. Operating Systems, Donovan M, McGraw Hill Publication 11. Operating Systems: A Design Oriented approach, Crowley, Tata McGraw Hill Publication 12. Operating Systems, S. Godbole, Tata McGraw Hill Publication
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Course 1142203: Operating System

Subject Code:	1142203
Subject title:	Operating System
Credit	4
Nature of Subject:	Theory Only
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2022-2023
Purpose of Course	An Operating System (OS) is a software that manages computer hardware and software resources and provides common services for computer programs. The operating system is an essential component of the system software in a computer system. Application programs usually require an operating system to function.
Course Objective	<p>The objective of this course is:</p> <ol style="list-style-type: none"> 1. To make students understand functionality provided by an Operating System. 2. To make students aware with basic concepts of Windows O. S. Management. 3. To teach device management to the Students.

Pre-requisite	Basic Knowledge of Programming.
Course Out come	After studying this course, students will be able to understand what the role of an OS is; how process management, memory management, and file management is performed by the OS. The students will be able to develop applications that coordinate with the respective OS in a much better way, which is so essential.

Course 1142204: Programming Skills With Python

Subject Code: 1142204	Total Credit: 4
Subject : Programming Skills with Python	

Unit	Description in detail	Weighting (%)
I	<p>Python Fundamentals:</p> <p>1.1. Concepts of Interpreter based programming language: 1.2. Structure of Python Programming language. 1.3. Python code Indention and execution 1.4. Python Variables: 1.5. Naming of variables and Dynamic declaration of variables 1.5.1. Comments in Python 1.6. Assigning values to multiple variables 1.7. Global variables 1.8. Python Datatypes: 1.8.1. Text (str), Numeric Type(int, float, complex), Boolean (bool) 1.9. Setting Datatypes 1.9.1. Type conversion (int, float, complex), casting (int, float, str) 1.10. User defined function . 1.10.1. Defining function, Function with Parameters 1.10.2. Parameter with default value, Function with return value</p>	25%
II	<p>Python Strings and Operators</p> <p>2.1. Python Strings : 3.2. Multiline string, String as character array, triple quotes 2.3. Slicing string, negative indexing, string length, concatenation 2.4. String Methods:(center, count, join, len, max, min, replace, lower, upper, replace, split) 2.5. Operators : 2.5.1. Arithmetic Operators(+, -, *, /, %, **, //) 2.5.2. Assignment Operators(=, +=, -=, /=, *=, //=) 2.5.3. Comparison Operators (==, !=, >, =, <=) 2.5.4. Logical Operators (and, or, not) 2.5.5. identity and member operators (is, is not, in, not in)</p>	25%
III	<p>Python conditional and iterative statements :</p> <p>3.1. if statement, if..elif statement, if..elif...else statements, nested if. 3.2. Iterative statements : 3.2.1. while loop, nested while loop, break , continue statements. for loop, range, break, continue, pass and Else with for loop, nested for loop. 3.3. List : creating list, indexing, accessing list members, range in list, List methods (append, clear, copy, count, index, insert, pop, remove, reverse, sort).</p>	25%

<p>IV</p>	<p>Python Collections and Library :</p> <p>4.1.Python Collections :</p> <p>4.1.1.Tuples : Declaring tuple, indexing tuple, changing tuple values,adding and removing data from tuple, Use of tuple() method to create tuple, count() and index() methods.</p> <p>4.1.2.Sets: declaring set, access set data, set methods (add, clear, copy,discard, pop, remove, union, update).</p> <p>4.2. Dictionary :</p> <p>4.2.1.Creating Dictionary, Adding, Accessing and Removing element 4.2.2.Dictionary methods : get(), pop(), popitem(), clear(), copy()</p> <p>4.3.Introduction to Numpy and Pandas :</p> <p>4.3.1. Overview of numpy</p> <p>4.3.2. Numpy methods (Mean, Median, Mode,Standard Deviation and Variance)</p> <p>4.4.Implementation of Numpy methods on numeric dataset createdusing list. 4.5.Pandas Dataframe:</p> <p>4.5.1.Creating dataframe using list</p> <p>4.5.2.Creating dataframe using dict of equal length list</p> <p>4.5.3.Reading data using csv file (read_csv())</p> <p>4.5.4.Retrieving rows and columns from dataframe using index</p> <p>4.5.5. Retrieving rows and columns using loc and iloc functions</p>	<p>25%</p>
<p>Text Book</p>	<p>1.Programming in C, Balaguruswami - TMH</p> <p>2.C Programming Language, Kernigham & Ritchie – TMH</p>	
<p>Reference Books :</p>	<p>1. The spirit of C, Cooper H & Mullish H - Jaico Pub.</p> <p>2. Programming in C, Stephan Kochan - CBS</p> <p>3. Mastering Turbo C, Kelly & Bootle - BPB</p> <p>4. C Language Programming, Byron Gottfried –TMH</p> <p>5. Learning Python -Mark Lutz : O'Reilly Media</p> <p>6. Core Python Programming – by Wesley J Chun ISBN-13: 978-0132269933</p> <p>7. Python for Everybody: Exploring Data in Python 3, by Charles Severance(Author), Aimee Andrion (Illustrator), Elliott Hauser (Editor), Sue Blumenberg (Editor)</p> <p>8. An Introduction to Python - by van Rossum Guido ISBN:9780954161767, 0954161769</p> <p>9.Core Python Application Programming – by Wesley J Chun Prentice Hall</p>	

Course 1142204: Programming Skills with python

Subject Code:	1142204
Subject title:	Programming Skills with python
Credit:	4
Nature of Subject:	Theory and Practical
Teaching per Week	4 Hours
Minimum weeks per Semester:	15 (Including Class work, examination, preparation etc.)
Review / Revision:	June 2022-2023
Purpose of Course:	Understand concepts of programming using Interpreter based programming Language Python. Python codes can be executed using any open source IDE. This is not IDE specific course.
Course Objective:	<ul style="list-style-type: none">- Introduction of Interpreter based Programming language Python.- Enhancing basic programming skills using Interpreter based and Compiler based programming languages.
Pre-requisite:	Fundamental knowledge of computer programming using python language. Knowledge of Python and Python IDE installation is recommended.
Course Outcome:	Students will be proficient working on conditional statements, iterative Statements and fundamentals of programming concepts using Python.

Course 1142205: Relational Database Management System

Subject Code: 1142205	Total Credit: 4
Subject : Relational Database Management System	

Unit	Description in detail	Weighting (%)
I	Introduction to Stored Procedure 1.1 what is store procedure 1.2 type of store procedure 1.3 use of store procedure 1.4 benefits and drawbacks of store procedure 1.5 Introduction of trigger 1.6 Used of triggers 1.7 Type of triggers 1.8 Advantage and disadvantage of using trigger.	20%
II	Advanced SQL 2.1. Data types (NUMBER, CHAR, VARCHAR, VARCHAR2, CLOB, NCLOB, LONG, DATE, RAW, LONGROW) 2.2. ROWID pseudo column & DUAL table 2.3. DATE Functions (SYSDATE, SYSTIMESTAMP, TO_CHAR, TRUNC, ROUND, NEXT_DAY, LAST_DAY, MONTHS_BETWEEN, ADD_MONTHS) 2.4. Concepts of Index (Create, drop) 2.5. Join Queries 2.5.1. Inner Join 2.5.2. Outer Join (Left, Right, Full) 2.5.3. Cross Join 2.6. Sub Queries with (Insert, update and Delete) 2.7. Nested queries	20%
III	PL/SQL and conditional Statements : 3.1. Introduction to PL/SQL (Definition & Block Structure) 3.2. Variables, Constants and Data Type 3.2.1 Assigning Values to Variables 3.2.2. User Defined Record 3.3. Conditional Statements 3.3.1. IF... THEN statement 3.3.2. IF..Else statements 3.3.3. multiple conditions 3.3.4. Nested IF statements 3.3.5. CASE statements	20%
IV	Iteration Statements : 4.1. Iterative statements : 4.4.1. Loop..End Loop 4.4.2. For.. Loop 4.4.3. While Loop 4.4.4. EXIT Loop 4.4.5. Continue	20%

V	Introduction of Cursors and Exception Handling: 5.1. Concepts of Cursors 5.2. Types of cursors (Implicit & Explicit) 5.2.1. Declare, open, fetch and close cursors. 5.2.2. Cursor Attributes : (%FOUND,%NOTFOUND,%ISOPEN,%ROWCOUNT) 5.3. Exception Handling in PL/SQL 5.4. Types of Exceptions: 5.4.1. Named System Exceptions 5.4.2. Unnamed System Exceptions 5.4.3. User-defined Exceptions 5.4.4. User Defined Exceptions	20%
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Text books	1. The Complete Reference, George Koch, Kevin Loney – Oracle Press 2. Database Management System, Oracle, SQL and PL/SQL, 2 nd ed., Das Gupta & Radha Krishna, PHI
Reference Books	1. Oracle 9 PL/SQL Programming, Scott Urman – Oracle Press 2. Oracle SQL: The Essential Reference, David C. Kreines – O’Reilly 3. SQL, PL/SQL: The Programming Language Of Oracle, Ivan Bayross – BPB 4. Oracle PL/SQL Programming – Feuerstein & Peribyl – SPD O’Reilly 5. Learning Oracle SQL and PL/SQL: A Simplified Guide, Rajeeb C. Chatterjee

Course 1142205: Relational Database Management System

Subject Code:	1142205
Subject Title:	Relational Database Management System
Credit	4
Nature of Subject:	Theory and Practical
Teaching Per Week	4 Hrs
Minimum Weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review/Revision	June 2022-2023
Purpose of Course	Imparting fundamental knowledge of Relational Database. This course also includes SQL & fundamentals of PL/SQL.
Course Objective	1. To make students understand RDBMS architecture 2. Have edge over Control and Iterative statements of PL/SQL 3. Understanding advanced SQL and various complex queries. 4. To make students aware of cursors and Exception Handling.
Pre-requisite	Basic knowledge of Database Management System (DBMS) .
Course Out come	After learning this subject students will know how to store, retrieve and administer the data easily & efficiently.

Course-1145206: Programming Skills with python

Subject Code: 1145206	Total Credit: 6
Subject : Programming Skills with python	

Nature of Subject :	Practical only
Teaching per Week:	6 Hours per week per Semester
Minimum weeks per Semester:	15 weeks (Including class work, examination, preparation etc.)
Purpose of Course :	<ul style="list-style-type: none"> - Practical implementation of technologies covered as part of syllabus using required software and learning application areas. - Comparing concepts of compiler based and interpreter based programming language and its conditional and iteration statements. - Understanding, use and application areas of interpreter based programming language Python and its important data structures. - Understanding concepts of Numpy and Pandas packages of Python.
Objective :	Objective of this course is to learn and enhance programming skills using interpreter based programming language Python. Learning and enhancing programming skills using control structures and some important data structures of Python. Learning concepts of python library files and its important features.
Pre-requisite:	Concepts of Programming language python.
Course Outcome :	<ul style="list-style-type: none"> - At the end of this course, students will have hands on experience of writing and applying codes using compiler based programming language. - Students will understand concepts of interpreter based programming language using python and executing codes using variables, in-built functions, control structures and some important data structures of python. - Students will have edge over concepts Programming skills and clear idea about using conditional and iterative statements, use of library functions and creating user defined functions. - Students will be able to understand and important packages like NumPy and Pandas in python.
Course Content:	1. Writing codes and execution of tasks based on Course-Paper-1142204.

Course-1145207: Relational Database Management System Practical

Subject Code: 1145207	Total Credit: 6
Subject : Relational Database Management System Practical	

Nature of Subject :	Practical only
Teaching per Week:	6 Hours per week per Semester
Minimum weeks per Semester:	15 weeks (Including class work, examination, preparation etc.)
Purpose of Course :	<ul style="list-style-type: none"> - Practical implementation of technologies covered as part of syllabus using required software and learning application areas. - Understanding and learning concept of databses and oracles. - Understand and used different databased connectivity by different joins. - Learning advanced queries, joining queries using multiple tables and implementation of procedural part using SQL. - Understanding various inbuilt functions and concepts of cursors.
Objective :	Objective of this course is to learn and enhance Relation between the different databased and learn different-different queries.
Pre-requisite:	Concepts of databased concepts of SQL.
Course Outcome :	<ul style="list-style-type: none"> - At the end of this course, students will have hands on experience of writing and applying codes. Students will have edge over concepts and clear idea about using conditional and iterative statements, use of different queries. - Students will be able to work on procedural language which incorporates SQL and relevant datatypes, control structures, in-built functions and cursors.
Course Content:	1. Practical implementation of SQL and Procedural SQL based on Paper-1142205.