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VEER NARMAD SOUTH GUJARAT UNIVERSITY
University Campus, Udhna-Magdalla Road, SURAT - 395 007, Gujarat, India.
વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી
યુનિવર્સિટી કેમ્પસ, ઉધના-મગદલ્લા રોડ, સુરત - ૩૯૫ ૦૦૭, ગુજરાત, ભારત.
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–: પરિપત્ર :–

બી.સી.એ.નો અભ્યાસક્રમ ચલાવતી સંલગ્ન કોલેજોના આચાર્યશ્રીઓને જણાવવાનું કે, શૈક્ષણિક વર્ષ ૨૦૨૦–૨૧ થી અમલમાં આવનાર B.C.A. Sem-I & II નો અભ્યાસક્રમ કોમ્પ્યુટર સાયન્સ વિષયની અભ્યાસસમિતિની તા.૧૯/૧૧/૨૦૧૯ ની સભાનાં ઠરાવ ક્રમાંકઃ ૩ અન્વયે નીમેલ પેટાસમિતિએ તૈયાર કરેલ અભ્યાસક્રમ ડીનશ્રીની ભલામણ મુજબ સદર અભ્યાસક્રમ શૈક્ષણિક વર્ષ ૨૦૨૦–૨૧ થી અમલમાં મુકી શકાય તે હેતુથી પ્રવર્તમાન પરિસ્થિતિને ધ્યાને લઈ અધીકાર મંડળોવતી માનનીય કુલપતિશ્રી ધ્વારા મંજૂર કરેલ છે. તેની જાણ સંબંધકર્તા શિક્ષકો અને વિદ્યાર્થીઓને કરવી, તદ્ઉપરાંત તેનો અમલ કરવો.

બિડાણઃ ઉપર મુજબ

ક્રમાંક : એકે./પરિપત્ર/૩૯૬૦/૨૦
તા.૦૩/૦૬/૨૦૨૦

R. B. P.T.O.
05-06-2020
ઈ.ચા.કુલસચિવ

પ્રતિ,
૧) બી.સી.એ. નો અભ્યાસક્રમ ચલાવતી સંલગ્ન કોલેજોના આચાર્યશ્રીઓ.
૨) ડીનશ્રી, કોમ્પ્યુટર સાયન્સ એન્ડ ઈન્ફોર્મેશન ટેકનોલોજી વિદ્યાશાખા.
૩) પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.

.....તરફ જાણ તેમજ અમલ સારૂ.

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

To be implemented from

Academic Year: June, 2020

: Submitted By:

Syllabus Committee

1) Dr. Snehal K. Joshi (Chairman)

2) Dr. Ashok Solanki

3) Prof. Dhananjy Patel

4) Prof. Vaibhav Desai

5) Prof. Brijesh Mehta

6) Dr. Kavita Ahuja

7) Prof. Pratiksha Patel

8) Mr. Indravadan Sadhwani

Veer Narmad South Gujarat University, Surat
Bachelor of Computer Application (B.C.A.)
Under the Faculty of Computer Science, Application and Information Technology

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 Veer Narmad South Gujarat 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 – 1 and SEM – 2)
(w.e.f. Academic Year June, 2020 – 2021)

Course Code	Title	Teaching Per Week (Credit/Hours)		Course Credits	University Examination		Internal Marks	Total Marks
		Theory	Practical		Duration	Marks		
101	Communication Skills	2	0	02	3 Hours	70	30	100
102	Mathematics	3	0	03	3 Hours	70	30	100
103	Introduction to Computers	4	0	04	3 Hours	70	30	100
104	Computer Programming & Programming Methodology (CPPM)	4	0	04	3 Hours	70	30	100
105	Data Manipulation and Analysis	4	0	04	3 Hours	70	30	100
106	Practical	-	12	06	5 Hours	140	60	200
	Foundation Elective (to be selected from NCC / NSS / Saptadhara)	0	0	02				
Total				25		490	210	700

Course Code	Title	Teaching Per Week (Credit/Hours)		Course Credits	University Examination		Internal Marks	Total Marks
		Theory Hours	Practical Hours		Duration	Marks		
201 – 1 201 - 2	Organizational Structure & Behavior Introduction to Internet & HTML	2	0	2	3 Hours	70	30	100
202 - 1 202 - 2	Computerized Financial Accounting Emerging Trends and Information Technology	3	0	3	3 Hours	70	30	100
203	Operating System - I	4	0	4	3 Hours	70	30	100
204	Programming Skills	4	0	4	3 Hours	70	30	100
205	Concepts of Relational Database Management System	4	0	4	3 Hours	70	30	100
206	Practical	0	12	06	5 Hours	140	60	200
	Foundation Elective (to be selected from NCC / NSS / Saptadhara)	0	0	02				
Total				25		490	210	700
	For Practical: (Batch Size –30 Maximum) : 1.In case of more than 10 students in a batch, separate batch should be considered.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. **Programming passing rules:** As per University rules.							

Consolidated Course Papers for F.Y.B.C.A. (SEM - I & SEM – II)
Academic Year of Implementation: 2020-2021

Course 101: Communication Skills

Course Code	101
Course Title	Communication Skills
Credit	2
Nature of Subject:	Theory Only
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2020
Purpose of Course	Effective communication is vital for the success in various situations. This course will help students develop and improve English Communication skills.
Course Objective	The objective of this course is to guide/help students in improving their English communication skills.
Pre-requisite	Basic School English
Course Out come	After studying this subject, students will be able to improve their communication skills in English.
Course Content	**Unit 1. Introduction** 1.1. Spoken and conversation for Greetings, Requests, Invitation, Permission, Thanks etc. 1.2.Basic Sentence patterns 1.3.Basic rule of Composition 1.4.Vocabulary Development 1.5.Paragraph Development **Unit 2. Fundamentals of Grammar** 2.1.Agreement between Subject and Verb 2.2.Model Auxiliary 2.3.Active and Passive voice 2.4.Conjunction and prepositions **Unit 3. Writing Skills** 3.1.Guidelines for effective writing 3.2.Writing style of application 3.3. Personal Resume **Unit 4. Business Letter and Report Writing Skills** 4.1. Business letter and Memo including Requests, Complaints, Quotation etc. 4.2.Technical Report writing **Unit 5. Speaking and Discussion Skills** 5.1.Components of Effective talk / presentation 5.2.Planning of content of a talk / presentation

	5.3.Use of Visual aids 5.4.Effective speaking skills 5.5.Discussion skills
Reference Books	1.Handbook of practical Communication skills – Chrisle W. JAICO 2.Basic Managerial Skills for all – S. J. McGrath - PHI 3.Reading to learn – Sheila Smith & Thomas M. Methuen (London) 4.Communication conversation Practice _ Tata McGraw Hill 5. Communication in English – R. P. Bhatnagar & R. T. Bell – Orient Longman 6. Good English – G. H. Vallins – Rups & Co.
	7. Let's talk English – M. I. Joshi 8. Essentials of Business Communications – Pat & Sons, S. Chand
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course 102: Mathematics

Course Code	102
Course Title	Mathematics
Credit	3
Teaching per Week	3 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2020
Purpose of Course	Purpose of this course is to develop mathematical abilities relevant to Computer Science.
Course Objective	The objective of this course is to guide/help students in developing Mathematical Abilities relevant to Computer Science.
Pre-requisite	School Mathematics
Course Out come	After studying this subject, students will be able to develop Mathematical Abilities relevant to Computer Science.
Course Content	**Unit 1. Set Theory** 1.1.Introduction 1.2.Representation 1.3.Operation and its properties 1.4.Venn Diagram 1.5.Cartesian product and graph **Unit 2. Functions** 2.1.Definition 2.2.Types – Domain and Range 2.3.Construction and functions **Unit 3. Mathematical Logic** 3.1.Introduction to logic 3.2.Truth Table **Unit 4. Boolean Algebra** 4.1Definition & Examples of Boolean Algebra 4.2Boolean Functions 4.3Representation and minimization of Boolean Functions 4.4Design example using Boolean algebra **Unit 5. Matrices and Determinants** 5.1.Matrices of order M * N 5.2.Row and Column transformation 5.3.Addition, Subtraction and multiplication of Matrices 5.4.Computation of Inverse 5.5.Cramer's Rule 5.6.Business Application of Matrices

Reference Books	1. Co-ordinate Geometry – Shanti Narayan 2. Linear Algebra – Sushoma Verma 3. Advanced Mathematics – B.S. Shah & Co. 4. Schaum's Outline of Boolean algebra and switching circuits – Elliot Mendelson 5. Digital Computer Fundamentals - Tata McGraw Hill, 6th Edition, Thomas C. Bartee 6. Business Mathematics - Qazi Zameeruddin, V. K. Khanna and S. K. Bhambri, Vikas Publishing House Pvt. Ltd.
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Paper – 103 (Introduction to Computers)

Course Code:	**103**
Course Title:	**Introduction to Computers**
Total Credits :	4 Credits
Nature of Subject :	Theory only
Teaching per Week:	4 Hours per week per Semester
Minimum weeks per Semester:	15 weeks (Including class work, examination, preparation etc.)
Review/Revision Year:	June, 2020
Purpose of Course :	- Concepts and types of computer and various hardware technologies relevant to computer as well as some important peripherals will be covered. - Introduction of computer internal memories, number systems and conversions from decimal to binary. - Exposure of various input and output devices as well as concepts of Internet and relevant gadgets and their applications.
Objective :	Objective is to provide knowledge of functional units, number System, Devices and memory & its storage.
Pre-requisite:	Fundamental Knowledge of Computers
Course Outcome :	After studying this subject, students will get knowledge of functional units, number System, devices and memory & its storage.
Course Content:	**<u>UNIT-1:</u> Introduction** 1.1 Introduction of Computer 1.2 Applications of Computer 1.3 Types of Computers – Super Computers, Mainframes, Mini Computers, Micro computers(Desktop, Laptop, Notebook, Tablet, Smart Phones) 1.4 Block Diagram and functional units of computer **<u>UNIT-2:</u> Basic Computer Architecture** 2.1 Concepts of Address Bus and Data Bus 2.2 Concept of virtual memory and cache memory 2.3. Hardware Components 2.3.1. Motherboard 2.3.2. Types of Processor (CPU and GPU) 2.3.3. Understanding processor speed 2.3.4. Memory – RAM(SRAM,DRAM, SDRAM), ROM, EPROM, EEPROM 2.3.5. Storage Devices – Hard Disk, CD, DVD, USB flash memory 2.4. Introduction to Software 2.4.1. Purpose and significance of Operating System 2.4.2. Concept of System Software and Application Software

	UNIT-3: Number System 3.1. Introduction of Decimal, Binary, Octal and Hexadecimal number Systems. 3.2 Conversion of Decimal to Binary and Binary to Decimal 3.3 Binary addition & subtraction 3.4 ASCII and ANSI character code **Unit – 4: Input & Output Devices** 4.1. Introduction of Input Devices 4.1.1. Pointing Devices – Mouse, Trackball, Joystick, Touch Screen, Light Pen 4.1.2. Keyboard 4.1.3. RFID concepts and application in FastTag 4.2. Introduction and purpose of Scanning Devices 4.2.1. Optical Scanner 4.2.2. Bar Code Reader 4.2.3. Web Camera 4.3. Introduction and comparisons of Output Devices 4.3.1. Monitors – LED, LCD,TFT, OLED, TouchScreen Monitor 4.3.2. Printers – Dot Matrix Printer, Laser Printer, Inkjet Printer **Unit - 5: Concepts of Internet** 5.1. Concepts of Internet and WWW 5.1.1 Types of Internet Services 5.1.2 Hardware – Modem, Router, Blue tooth, Fire-Stick 5.1.3 Internet connections using Hotspot, WiFi, cable 5.2 Introduction of Cloud 5.2.1 Concepts of cloud 5.2.2 Purpose and application of Cloud (Example of GoogleDoc) 5.2.3 Concepts of Online Data Backup 5.3 Introduction of Web Browser and relevant terminologies : 5.3.1 URL, Address bar, Domain, Links, Navigation Buttons 5.3.2 Tabbed browsing, Bookmarks, History
Reference Books:	1. How computer work: Ron White – Tech media 2. Introduction to computers: 4th Edition – Peter Norton 3. Fundamentals of Computers: V. Rajaraman 4. Computer Fundamentals: Pradeep K. Sinha & Priti Sinha (BPB) 5. Introduction to Networking RechardMcMohan Tata McGraw Hill Publication 6. HTML Black Book – Steven Holzner – Dreamtech Press 7. Computer Network Fundamentals and application – R S Rajesh Vikas Publication 8. HTML for the World Wide Web, Fifth Edition, with XHTML and CSS- Peachpit Press
Teaching Methodology:	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method:	30% internal assessment. 70% External assessment

Paper – 104 Computer Programming & Programming Methodology

(CPPM)

Course Code:	**104**
Course Title:	**Computer Programming & Programming Methodology (CPPM)**
Total Credits :	4 Credits
Nature of Subject :	Theory and Practical application
Teaching per Week:	4 Hours per week per Semester
Minimum weeks per Semester:	15 weeks (Including class work, examination, preparation etc.)
Review/Revision Year:	June, 2020
Purpose of Course :	- Computer programming (often shortened to programming) is a process that leads from an original formulation of a computing problem to executable computer programs. - Programming involves activities such as analysis, developing, understanding, generating algorithms, verification of requirements of algorithms including their correctness, and implementation (commonly referred to as coding) of algorithms in a target programming language. - Students pursuing their Graduation program will encounter their first programming language which is one of the pioneer computer programming languages. - Purpose of the course is to emphasis on concepts of Compiler based programming language, structure of code, algorithms, flow-charts, problem solving attitude, concepts of variables and declaration mechanism of different datatypes, simple I/O statements, conditional statements, loops, compound iterations, strings and certain inbuilt functions, header files, concepts of arrays and one dimensional numeric array operations, numeric inbuilt functions and concepts of pointers.
Objective :	Object of this course is to introduce students the essentials of computer Programming and programming methodology using C language.
Pre-requisite:	None
Course Outcome :	- Students will be able to formulate a computing problem to executable computer program using C language. - Understand about compiler based programming languages. - Concepts of variables, literals, data types, conversions of data types, input and output data and processing of data, inbuilt functions, arrays, header files, conditional and iterative statements.
Course Content:	**UNIT-1:** Introduction 1.1 Concepts of Programming Language 1.1.1 Introduction of Source Code, Object Code and executable code 1.1.2 Algorithm and Flowchart 1.1.3 Concepts of Structured Programming Language 1.2 Concepts of Editor, Interpreter and Compiler 1.2.1 Introduction of C program body structure 1.2.2 Character Set, concepts of variables and constants 1.2.3 Identifiers, literals, Key words 1.2.4 Data types (signed and unsigned) (Numeric : int, short int, long, float, double) , (Character type: char, string) and void. 1.2.5 Concepts of source code, object code and executable code.

UNIT-2: Input/Output Statements and Operators:

2.1 Input/Output statements:

2.1.1 Concepts of Header files (STDIO,CONIO)

2.1.1.1 Concepts of pre-compiler directives.

2.1.1.2 Use of #inlcude and #define

2.2 Input/Output Statements:

2.2.1 Input statements : scanf(), getc(), getch(), gets(), getchar()

2.2.2 Output Statements: printf(), putc(),puts(), putchar()

2.2.3 Type specifiers (formatting strings) : %d, %ld, %f, %c, %s, %lf

2.3 Operators :

2.3.1 Arithmetic operators (+, -, *, /, %, ++, --,)

2.3.2 Logical Operators (&&, ||, !)

2.3.3 Relational Operators (>, <, ==, >=, <=, !=)

2.3.4 Bit-wise operators (&, |, ^ , <<, >>)

2.3.5 Assignment operators (=, +=, -=, *=, /=, %=)

2.3.6 Ternary Operator and use of sizeof() function.

2.4 Important Built-in functions:

2.4.1 Use of <string.h> : (strlen, strcmp, strcpy, strcat, strrev)

2.4.2 Use of <math.h> : (abs(), floor(), round(), ceil(), sqrt(), exp(), log(), sin(), cos(), tan(), pow() and trunc())

UNIT-3: Decision Making statements :

3.1 if statements :

3.1.1 simple if statements

3.1.2 if…else statements

3.1.3 if…else if….else statements

3.1.4 Nested if statements.

3.2 Switch..case statements

3.2.1 Use of break and default

3.2.2 Difference between switch and if statements.

UNIT-4: Iterative statements :

4.1 Use of goto statement for iteration

4.2 while loop

4.3 do..while loop

4.4 for loop

4.5 Nested while, do..while and for loops

4.6 Jumping statement: (break and continue)

UNIT-5: Concepts of Arrays and pointer

5.1 Concepts of Single-dimensional Array

5.1.1 Numeric single dimensional Array

5.1.2 Numeric single dimensional array operations:

5.1.2.1 Sorting array in ascending or descending. (Bubble and selection)

5.1.2.2 Searching element from array (Linear Search)

5.1.3 Character Single dimensional Array

5.1.3.1 Character Single dimensional array operations:

5.1.3.2 Use of \0, \n and \t

5.2 Pointers:

5.2.1 Concepts of Pointers

5.2.2 Declaring and initializing int, float, char and void pointers

5.2.3 Pointer to single dimensional numeric array.

Reference Books:	1. Programming in C, Balaguruswami – TMH 2. C: How to Program, Deitel & Deitel - PHI 3. C Programming Language, Kernigham & Ritchie - TMH 4. Programming in C, Stephan Kochan - CBS 5. Mastering Turbo C, Kelly & Bootle - BPB 6. C Language Programming – Byron Gottfried - TMH 7. Let us C, Yashwant Kanetkar - BPB Publication 8. Magnifying C, Arpita Gopal - PHI 9. Problem Solving with C, Somashekara - PHI 10. Programming in C, Pradip Dey & Manas Ghosh – Oxford
Teaching Methodology:	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method:	30% internal assessment. 70% External assessment

Course 105: Data Manipulation and Analysis (DMA)

Course Code:	**105**
Course Title:	**Data Manipulation and Analysis**
Credit:	4
Nature of Subject:	Theory and Practical Application
Teaching per Week	4 Hours
Minimum weeks per Semester:	15 (Including Class work, examination, preparation etc.)
Review / Revision:	June, 2020
Purpose of Course:	Understand concepts of Data and storage of data. This course is aimed to impart knowledge about storing data, concepts of database, retrieval of data and manipulation of data. It is aimed to cover effective storage of data, statistical analysis of data and graphical presentation of data. It also covers concepts of database and fundamental of query languages to insert, access, and manipulate data. This course is not spreadsheet or database specific.
Course Objective:	i) Concepts of data, data storage and statistical manipulation of data. ii) Introduction of spreadsheet and data manipulation using spreadsheet. iii) Concepts of database, storage and manipulation of data using query language.
Pre-requisite:	Concepts of data.
Course Outcome:	Students will be proficiently working on data manipulation using spreadsheet, fundamentals of database and handling database using query language using SQL.
Course Content:	**UNIT-1: Concepts of worksheet: (Max.Weightage: 15%)** 1.1 Fundamentals of Worksheet: 1.1.1 Concepts of workbook, adding worksheet, cell address, formula bar, column, rows, cells, Insert, delete, format cells , cell size (row-height, column weight), rename sheet, protect sheet, lock cell. 1.1.2 Cut, copy, paste, paste special, format painter, font size, font face, fill color, font color, font alignment 1.2 Alignment, indent, Number format, percent style, coma style, increase/decrease decimal 1.2.1 Insert picture, shapes 1.2.2 Insert Textbox, Header & Footer, Symbols 1.2.3 Save, save as, save file as csv, spell check, protect sheet and Workbook, Linking spread sheets. 1.2.4 Print, Quick print, Print preview 1.2.5 Split, Hide and freeze panes in worksheet. **UNIT-2: Formulas, Chart and Data: (Max.Weightage: 15%)** 2.1 Charts : 2.1.1 Creating 2D and 3D charts (Columns, Line, Pie, Bar, Scatter) 2.1.2 Difference among columns, Line and bar charts. 2.2 Formulas: 2.2.1 sum, average, count, max, min, sumif, pmt, stddev 2.2.2 Logical (if, AND, OR, NOT, TRUE, FALSE) 2.2.3 Date and Day function : Date, day, time, now, Hour, Minute, Second, Month, Days360, weekday 2.3 Data : 2.3.1 Sort Data, Filter Data 2.3.2 Text to columns, Remove Duplication 2.3.3 Consolidated Data (sum, count, max, min, average) **UNIT-3: Concepts of Database: (Max.Weightage: 25%)** 3.1 Database characteristics: 3.1.1 Data Independence (Logical and Physical) 3.1.2 Components of Database (User, Application , DBMS, Database) 3.1.3 Database Architecture (1-tier, 2-tier, 3-tier) 3.1.3.1 Comparison, advantages and disadvantages.

	3.2 Database Models (Hierarchical, Network, E/R, Relational) 3.2.1 E/R model : Entity, Relationship, Attribute 3.2.2 E/R Diagram : One to one, one to many , many to one, many to many 3.2.3 Strong entity, weak entity 3.2.4 key attribute, derived attribute, Multi-valued attribute 3.3 Types of keys : 3.3.1 Super key, candidate key, Primary key, Composite key, Foreign key, Unique key. **UNIT-4: Normalization and Concepts of SQL: (Max.Weightage: 25%)** 4.1 Why normalization (Insertion, Updating, Deletion anomalies) 4.2 Normalization Rules: 4.2.1 Concepts of Dependency, Transitive Dependency 4.2.2 Armstrong Axioms 4.2.3 1st Normal Form, 2nd Normal Form, 3rd Normal Form, B.C.N.F. 4.3 Concepts of Structure Query Language (SQL) 4.3.1 SQL datatypes : int, float, double, char, varchar, number, varchar2, Text, date 4.4 DDL Statements : 4.4.1 Create , Drop, Truncate, Rename, Alter 4.5 DML and DQL(Data Query Language) Statements : 4.5.1 Insert, Update, Delete 4.5.2 select **UNIT-5: Queries (Single Table only) (Max.Weightage: 20%)** 5.1 Using where clause and operators with where clause: 5.1.1 In, between , like, not in, =, !=, >, <, >=, <=, wildcard operators 5.1.2 Order by, Group by, Distinct 5.1.3 AND, OR operators, Exists and not Exists 5.1.4 Use of Alias 5.2 Constraints (Table level and Attribute Level) 5.2.1 NOT NULL, CHECK, DEFAULT 5.2.2 UNIQUE, Primary Key, Foreign Key 5.2.3 On Delete Cascade 5.3 SQL Functions : 5.3.1 Aggregate Functions: avg(), max(), min(), sum(), count(), first(), last(). 5.3.2 Scalar Functions: ucase(), lcase(), round(), mid(). 5.4 Creating sequence 5.5 Views : 5.5.1 Creating simple view, updating view, dropping view. 5.5.2 Difference between View and Table.
References :	1. OpenOffice.org For Dummies - Gurdy Leete, Ellen Finkelstein, Mary Leete - Wiley Pub. 2. Beginning OpenOffice 3: From Novice to Professional - Andy Channellle - Apress Pub. 3. The OpenOffice.org 2 Guidebook - Solveig Haugland 4. Taming Apache OpenOffice: Getting Started - Jean Hollis Weber - Friends of OpenDocument Inc. 5. Open Office Basic: An Introduction - James Steinberg - Gold Turtle Pub. 6. Database System Concepts: – Henry F. Korth & Abrahim Silberschatz – McGraw Hill Education 7. Introduction to Database Management System– Bipin C. Desai – Galgotia Publication 8. Principles of database systems – Jeffery Ullman – Galgotia Publication 9. An introduction to Database Systems – C. J. Date – Addison Wesley 10. Introduction to database Management – Navin Prakash -TMH 11. Learn Open Office 3.1 Base – AZIMUTH 12. OpenOffice 3.4 Volume III: Base-Christopher N. Cain, Riley W. Walker-

	Quantum Scientific Publishing 13. Discovering SQL-A Hands-on Guide for Beginner-Alex KriegelWrox Publication 14. A Conceptual Guide to OpenOffice.org 3-R. Gabriel Gurley (Free E-book)
Teaching Methodology:	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method:	30% Internal assessment. 70% External assessment.

Course-106: Practical

Course Code:	**106**
Course Title:	**Practical**
Total Credits :	06 Credits
Nature of Subject :	Practical only
Teaching per Week:	12 Hours per week per Semester
Minimum weeks per Semester:	15 weeks (Including class work, examination, preparation etc.)
Review/Revision Year:	June, 2020
Purpose of Course :	- Practical implementation of technologies covered as part of syllabus using required software and learning application areas. - Understanding and learning programming concepts, data types and variables using c programming language. - Learning concepts of compiler based programming language and its conditional and iteration structures. - Understanding use and application areas of spread-sheet. Storing and presenting data using charts, use of formulas and formatting data. - Understanding concepts of data and database. - Accessing, storing and controlling data using query language. (Only single table queries).
Objective :	Objective of this course is to introduce essentials of computer programming language, introduction of compiler based programming language, concepts of data and representation of data , use of query languages and storing and accessing data using query languages.
Pre-requisite:	None
Course Outcome :	- 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 structure of program, concepts of compiling and executing codes using variables, in-built functions, header files and control structures. - Students will have edge over concepts of work-sheets, storage of data, types of data, handling, manipulating and representing data using formulas and charts. - Students will be able to understand concepts of database and storage of data in structured way as well accessing and manipulation of data using structured query language.
Course Content:	1. Creating and performing tasks based on unit 1 and 2 of Course-Paper-105. 2. Practical implementation of SQL based on Unit-3, Unit-4, Unit-5 of Course-Paper-105. 3. Practical implementation based on Course-Paper-104.
Teaching Methodology:	- Practical work - Lab sessions and hands on experience, Discussion, Self-Study - Students will create word document containing SQL based work including tables and queries and represent their work using presentation software at end of the semester.
Evaluation Method:	30% Internal assessment. 70% External assessment. [For Internal and External Examination Suggested distribution of question weight will be :50% - based on Course-paper-104 , 15% - based on Unit-1 & Unit-2 of Course-paper-105 and 35% - based on Unit-3, Unit-4 and Unit-5 of Course-paper-105.)

Course 201-1 : Organization Structure & Behaviour

Course Code	201-1 (Elective Paper – 1)
Course Title	Organization Structure & Behaviour
Credit	2
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2020
Purpose of Course	Computer Science professionals work at different levels in the hierarchy of various jobs in IT. So it is essential to understand the Organization Structure and behaviour.
Course Objective	The objective of this course is to make students aware about the Structure of an Organization and also provide them teaching that leads to better understanding of human behaviour in an organization.
Pre-requisite	Basic Communication Skills
Course Out come	After completion of the course the student will be aware about the Structure of an Organization and also will have better understanding of human behaviour in an organization.
Course Content	**Unit 1. Introduction to Organization and Management** 1.1.What makes an organization 1.2.Structure of organization 1.3.What is Management 1.4.Scope of Management 1.5.Role of Management 1.6.Manager's Role (Interpersonal Role, Information Role and Decisional Role) 1.7.Managerial Skills (Technical Skills, Human Skills, Conceptual Skills) **Unit 2. Attitude** 2.1.Meaning of Attitudes 2.2.Characteristics of Attitudes **Unit 3. Motivation** 3.1.What is motivation? 3.2.Nature and Characteristics of Motivation 3.3.Importance & Benefits of Motivation **Unit 4. Leadership** 4.1.What is Leadership? 4.2.Characteristics of Leadership 4.3.Leadership Styles 4.4.Leadership Skills (Technical Skills, Conceptual Skills. Personal Skills) **Unit 5. BPO & Call Centre** 5.1. What is B.P.O? 5.2.What is out-sourcing? Benefits of outsourcin 5.3.What is Call Centre? 5.4.Call Centre setup & functions

Reference Book	1. Management & Organization Development – By Ahmed Abod Rachna Prakashan, New Delhi 2. Organization Behaviour – By Aplewhite Philip, Prentice hall 3. Management & Organization Development – By Argyris Chris, McGraw Hill 4. Human Behaviour at work – By Davis Keeth, Tata McGraw Hill 5. Organization Behaviour – By L. M. Prasad. 6. Principles and Practices of Management – By L. M. Prasad. 7. Managing People at work – By Harris O Jeff, John Wiley & Sons Publication 8. Call Centres – By S. Pankaj (APII Publication)
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 201-2 - Introduction to Internet & HTML

Course Code:	**201 – 2 (Elective Paper - II)**
Course 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, 2020
Purpose of Course :	- 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 :	- 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 Content:	**UNIT-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 Types of Internet connection (Dial-up Connection, Leased Connection, Broadband Connection, Wi-Fi, Mobile Broadband, Mobile Hotspot, Cable Model Connection) 1.2.2 Working of Internet 1.2.3 Difference between Internet, Intranet, Extranet

	UNIT-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 2.5.1Search Engine, Web Server, News Group 2.5.2 E-mail, E-Learning, E-Banking, E-Governance 2.5.3Social Networking, Instant Massaging, IRC, Audio and Video Conferencing **UNIT-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 **UNIT-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>, <img>) 4.3 HTML Attributes (alt, href, src, width, height, style, title, id) 4.4 HTML Headings (<head>) 4.5 Text Formatting Tags(<b>, ,<i>,,<mark>,<small>,<del>, <ins>,<sub>,<sup>) **UNIT-5: Structuring Web Page using HTML** 5.1 Tables 5.1.1 Table height and width 5.1.2 Table Caption 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)

Reference Books:	1. Internet- The Complete Reference, Margaret Levine Young- McGraw-Hill 2. The Rough Guide to The Internet- Rough Guides Limited 3. Introduction to Networking RechardMcMohan Tata McGraw Hill Publication 4. HTML Black Book – Steven Holzner – Dreamtech Press 5. Computer Network Fundamentals and application – R S Rajesh Vikas Publication 6. HTML for the World Wide Web, Fifth Edition, with XHTML and CSS- Peachpit Press 7. Advanced HTML companion – Keith S. & Roberts - AP Professional
Teaching Methodology:	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method:	30% internal assessment. 70% External assessment

Course 202 - 1: Computerized Financial Accounting

Course Code	202
Course Title	Computerized Financial Accounting
Credit	3
Nature of Subject :	Theory only.
Teaching per Week	3 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2020
Purpose of Course	Accounting takes an important role in operating an organization. Every business must keep track of financial information that relates to its business activities. This course will help students in understand basic concepts of Financial Accounting and also understand working of a good Financial Accounting software.
Course Objective	The objective of this course is to teach basic concepts of Financial Accounting & use of a good Financial Accounting Software
Pre-requisite	None
Course Out come	After learning this subject student will be able to know the basic concepts of Financial Accounting & use of a good Financial Accounting Software.

Course Content	**Unit 1. Introduction to Accounting System** 1.1.Meaning & Definition of Accounting 1.2.Objectives of Accounting 1.3.Concepts and Features of Book Keeping 1.4.Branches of Accounting (Financial Management, Cust) 1.5.Basis of Accounting (Accrual Bases, Cash Bases) 1.6.Accounting Concepts **Unit 2. Accounting Equation & Transaction Analysis** 2.1.Introduction to Assets, Liabilities, Equities 2.2.Concepts of Transaction Analysis 2.3.Classification of Accounts (Real Account, Personal Account, Nominal Account) **Unit 3. Concepts of Book-Keeping** 3.1.Introduction of Single Entry System and its advantages/disadvantages 3.2.Introduction of Double Entry System and its advantages 3.3.Types of Business Transaction 3.3.1.Cash Transaction 3.3.2.Credit Transaction 3.3.3.Barter Transaction 3.4.Concepts of important Terminologies: Opening Stock, Closing Stock, Goods, Inventory, Assets, Liabilities, Capital, Debit, Debtors, Creditors, Income, Expenses, Loss, Profit, Credit, Debit. **Unit 4. Journal & Subsidiary Books (With Preliminary examples)** 4.1.Meaning of Journal 4.2.Format of Journal 4.3.Concept and format of cash Book 4.4.Concept and format of Petty cash Book 4.5.Concept and format of Purchase, Sale, Purchase Return and Sale Return Book **Unit 5. Concept of Accounting Mechanism** 5.1.Meaning and Definition of Ledger 5.2.Types of Ledger 5.3.Trial Balance and its objectives
Reference Book	1. Accounting for Management – By Dr. Hawaharlal 2. Financial Management - By Dr. S. N. Maheshwari 3. Accounting for Management – By S. K. Bhattacharya & John Deardon 4. Advanced Accountancy – By S. P. Jain & K. I. Narang 5. Implementing Tally 6.3 – By K. K. Nathani – BPB Publication 6. Implementing Tally 7.2 – By A. K. Nathani & K. K. Nathani BPB Publication
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course-202-2 : Emerging Trends and Applications in IT (ET & IT)

Course Code	202 - 2
Course Title	Emerging Trends and Applications in IT (ET & IT)
Credit	3
Nature of Subject:	Theory Only
Teaching per Week	3 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2020
Purpose of Course	Technology changes very frequently. The information technology and software industry is emerging at very fast pace. Aim of this course is to provide 1) Fundamental Knowledge about emerging trends in Information & Communication Technology. 2) Study about Design and implementation concepts of Application software & their applicability. 3) Students acquire concepts and knowledge about designing professional and commercial application softwares.
Course Objective	(i) To provide fundamental information regarding the emerging trends of ICT industry. (ii) To provide basic knowledge about emerging trends and related buzz words of ICT industry. (iii) To provide basic knowledge and glimpses about readymade software applications, their design and application areas.
Pre-requisite	None
Course Out come	After studying this course, students will be able to understand concepts of emerging information Technology and readymade software.
Course Content	**Unit 1. Software Fundamentals** 1.1.What is software 1.2.Types of software (System and Application Sotware) 1.3. System Software Fundamentals. 1.4. Application software fundamentals. 1.5. Purpose of Application software 1.6 Stand-alone Application software 1.7 Multi-user Application Software 1.8 Client-server Architecture concepts. **Unit 2. Introduction to File System and File Management** 2.1.What is website 2.2.Purpose of Website 2.3. Working of interactive websites. 2.4. Various software and tools used to develop static and interactive websites. 2.5 Working of online transactions **Unit 3. Case Study-1 :**

	3.1. Study of design and application of popular websites. [Purpose of this unit is to show Live demo of various sites and introduce their various features during class room teaching.] 3.1.1 Online product shopping websites: Case Study of Amazon, Snapdeal, Flipkart. 3.1.2. Online reservation system : Case study of Railway Reservation System (IRCTC), Bus Reservation System (GSRCT). 3.1.3 Online transactions processing 3.2 Online Payments: 3.2.1 Security measures of online payment system. 3.2.2 Payment gateway 3.2.3 Concepts of NEFT, RTGS, IMPS 3.2.4 Online Payment Systems using mobile apps like PayTm, BHIM 3.2.5 Online payments process through Credit and Debit Cards. **Unit 4. Case Studies of Application Software (Any live System should be shown as case study):** 4.1. Production planning Application software system 4.2.Accounting Application software system 4.3.Inventory Applications: 4.4. Mobile Application 4.4.1 Fundamentals of mobile Applications 4.4.2 Concepts of mobile apps and their OS(iOS,Android) **Unit 5. Emerging Trends in IT** **[Purpose of this unit is to give only Fundamental knowledge about the terminologies and emerging concepts of these technologies]** 5.1. Emerging trends and Buzz words (Only Basic concepts) 5.1.1 Concepts of ERP (Fundamentals and importance) 5.1.2 ETL concepts (Extraction, Transformation, Loading) 5.1.3 Concepts of Data Warehousing 5.1.4 Concepts of data science and its application areas. 5.1.5 Concepts of Data Analytics and related tools 5.1.6 Concepts of Business Analytics 5.1.7 Concepts of cloud
Reference Books	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
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course 203: Operating System - I

Course Code	203
Course Title	Operating System - I
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 2020
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	The objective of this course is: 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 Content	**Unit 1. 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 **Unit 2. Introduction to File System and File Management** 2.1.File Concept 2.2.Operations on File 2.3.File Access Methods (Sequential Access and Direct Access) 2.4. Directory Systems File Management Functions. 2.5. File System and Directory Structure organization. 2.6. File Protection. **Unit 3. Introduction of Linux** 3.1.Introduction of Linux versions 3.2.Components of Linux 3.3.Comparison of Windows and Linux **Unit 4. Linux Administration** 4.1.Installing Linux 4.2.Installation of Open Source Software 4.3.Maintaining User Accounts 4.4.System Config Services (Package) **Unit 5. Device Management** 5.1.Device Management Function 5.2.Device Characteristics 5.3.Disk space Management 5.4.Allocation and Disk Scheduling Methods
Reference Books	1. Operating System Concepts: – James Peterson: – McGraw Hill 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
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course 204: Programming Skills

Course Code:	204
Course Title:	Programming Skills
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, 2020
Purpose of Course:	Understand concepts of programming using Compiler based programming language C and Interpreter based programming Language Python. Python codes can be executed using any open source IDE. This is not IDE specific course.
Course Objective:	i) Advance programming skills using compiler based programming language C ii) Introduction of Interpreter based Programming language Python. iii) Enhancing basic programming skills using Interpreter based and Compiler based programming languages.
Pre-requisite:	Fundamental knowledge of computer programming using 'C' 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 C and Python.
Course Content:	**UNIT-1: Arrays, Structure & Union and User defined function in C programming Language:** 1.1Concepts of Two-Dimensional Numeric Array: 1.1.1 Declaring Two-Dimensional numeric array 1.1.2 Two-Dimensional numeric Array operations (Addition, Subtraction, Multiplication, Transpose) 1.1.3 Element Address in array (Row major and Column major) 1.1.4 Two-Dimensional Character Array: 1.1.4.1 Declaring & Initializing Two-Dimensional character array 1.1.4.2 Two-Dimensional character Array operations (Searching elements, copying, merging, finding length of given string) 1.2 Concepts of structure and Union: 1.2.1 Defining, declaring and Initializing structure and Union 1.2.2 typedef and accessing structure member 1.2.3 Difference between structure and union 1.3 User defined functions : 1.3.1 Function return type, parameter list, local function variables 1.3.2 Passing arguments to function 1.3.3 Calling function from main() function or from other function. 1.3.4 Function with No arguments and no return value, No arguments and a return value, with arguments and no return value, with arguments and a return value. 1.3.5 Recursive Function

UNIT-2 : Python Fundamentals:

2.1 Concepts of Interpreter based programming language:
- 2.1.1 Structure of Python Programming language.
- 2.1.2 Python code Indention and execution

2.2 Python Variables:
- 2.2.1 Naming of variables and Dynamic declaration of variables
- 2.2.2 Comments in Python
- 2.2.3 Assigning values to multiple variables
- 2.2.4 Global variables

2.3 Python Datatypes:
- 2.3.1 Text (str), Numeric Type(int, float, complex), Boolean (bool)
- 2.3.2 Setting Datatypes
- 2.3.3 Type conversion (int, float, complex), casting (int, float,str)

2.4 User defined function .
- 2.4.1 Defining function, Function with Parameters
- 2.4.2 Parameter with default value, Function with return value

UNIT-3 : Python Strings and Operators

3.1 Python Strings :
- 3.1.1 Multiline string, String as character array, triple quotes
- 3.1.2 Slicing string, negative indexing, string length, concatenation
- 3.1.3 String Methods:(centre, count, join, len, max, min, replace, lower, upper, replace, split)

3.2 Operators :
- 3.2.1 Arithmetic Operators(+,-,*,/,%,**,//)
- 3.2.2 Assignment Operators(=,+=,-=,/=,*=,//=)
- 3.2.3 Comparison Operators (==, !=, >,<,>=,<=)
- 3.2.4 Logical Operators (and, or, not)
- 3.2.5 identity and member operators (is, is not, in, not in)

UNIT-4 : Python conditional and iterative statements :

4.1 if statement, if..elif statement, if..elif…else statements, nested if

4.2 Iterative statements :
- 4.2.1 while loop, nested while loop, break , continue statements.
- 4.2.2 for loop, range, break, continue, pass and Else with for loop, nested for loop.

4.3 List : creating list, indexing, accessing list members, range in list, List methods (append, clear, copy, count, index, insert, pop, remove, reverse, sort).

UNIT-5: Python Collections and Library :

5.1 Python Collections :
- 5.1.1 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.
- 5.1.2 Sets: declaring set, access set data, set methods (add, clear, copy, discard, pop, remove, union, update).

	5.1.3 Dictionary : 5.1.3.1 Creating Dictionary, Adding, Accessing and Removing element 5.1.3.2 Dictionary methods : get(), pop(), popitem(), clear(), copy() 5.2 Introduction to Numpy and Pandas : 5.2.1 Overview of numpy 5.2.1.1 Numpy methods (Mean, Median, Mode, Standard Deviation and Variance) 5.2.1.2 Implementation of Numpy methods on numeric dataset created using list. 5.2.2 Pandas Dataframe: 5.2.2.1 Creating dataframe using list 5.2.2.2 Creating dataframe using dict of equal length list 5.2.2.3 Reading data using csv file (read_csv()) 5.2.2.4 Retrieving rows and columns from dataframe using index 5.2.2.5 Retrieving rows and columns using loc and iloc functions.
References :	1.Programming in C, Balaguruswami - TMH 2. C Programming Language, Kernigham & Ritchie - TMH 3. The spirit of C, Cooper H & Mullish H - Jaico Pub. 4. Programming in C, Stephan Kochan - CBS 5. Mastering Turbo C, Kelly & Bootle - BPB 6. C Language Programming, Byron Gottfried –TMH 7. Learning Python -Mark Lutz : O'Reilly Media 8. Core Python Programming – by Wesley J Chun ISBN-13: 978- 0132269933 9. Python for Everybody: Exploring Data in Python 3, by Charles Severance (Author), Aimee Andrion (Illustrator), Elliott Hauser (Editor), Sue Blumenberg (Editor) 10. An Introduction to Python - by van Rossum Guido ISBN: 9780954161767, 0954161769 11. Core Pyhton Application Programming – by Wesley J Chun Prentice Hall
Teaching Methodology:	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method:	30% Internal assessment. 70% External assessment.

Course 205: Concepts of Relational Database Management System

Course Code	205
Course Title	Concepts of 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 2020
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 Content	**Unit-1. Introduction of Relational model** 1.1 Codd's Rules 1.2 Relational operations Algebra (select, project, union, intersection, rename) 1.3 Transaction control language: commit, savepoint, rollback 1.4 Data Control language: Grant, Revoke **Unit-2 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 **Unit-3: PL/SQL and conditional Statements :** 3.1 Introduction to PL/SQL (Definition & Block Structure) 3.2 Variables, Constants and Data Type 3.3 Assigning Values to Variables 3.4 User Defined Record 3.5 Conditional Statements 3.5.1 IF…THEN statement 3.5.2 IF..Else statements 3.5.3 multiple conditions 3.5.4 Nested IF statements 3.5.5 CASE statements **Unit-4 : Iterative Statements :** 4.1 Iterative statements : 4.1.1 Loop..End Loop 4.1.2 For.. Loop 4.1.3 While Loop 4.1.4 EXIT Loop 4.1.5 Continue

	Unit-5: Cursors and Exception Handling: 5.1 Concepts of Cursors 5.1.1 Types of cursors (Implicit & Explicit) 5.1.2 Declare, open, fetch and close cursors. 5.2 Cursor Attributes : (%FOUND,%NOTFOUND,%ISOPEN,%ROWCOUNT) 5.3 Exception Handling in PL/SQL 5.3.1 Types of Exceptions: 5.3.1.1 Named System Exceptions 5.3.1.2 Unnamed System Exceptions 5.3.1.3 User-defined Exceptions 5.3.1.4 User Defined Exceptions 5.3.2 Exception Handling
Reference Book	1. The Complete Reference, George Koch, Kevin Loney – Oracle Press 2. Database Management System, Oracle, SQL and PL/SQL, 2nd ed., Das Gupta & Radha Krishna, PHI 3. Oracle 9 PL/SQL Programming, Scott Urman – Oracle Press 4. Oracle SQL: The Essential Reference, David C. Kreines – O'Reilly 5. SQL, PL/SQL:The Programming Language Of Oracle, Ivan Bayross – BPB 6. Oracle PL/SQL Programming – Feuerstein & Peribyl – SPD O'Reilly 7. Learning Oracle SQL and PL/SQL: A Simplified Guide, Rajeeb C. Chatterjee
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course-206: Practical

Course Code:	**206**
Course Title:	**Practical**
Total Credits :	06 Credits
Nature of Subject :	Practical only
Teaching per Week:	12 Hours per week per Semester
Minimum weeks per Semester:	15 weeks (Including class work, examination, preparation etc.)
Review/Revision Year:	June, 2020
Purpose of Course :	- Practical implementation of technologies covered as part of syllabus using required software and learning application areas. - Understanding and learning concepts like structure, union and user defined functions using c-programming. - 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. - 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 programming skills using compiler based programming language C and interpreter based programming language Python. Learning and enhancing programming skills using control structures and some important data structures of Python and C-programming language. Learning concepts of python library files and its important features.
Pre-requisite:	Concepts of Programming language C and concepts of SQL.
Course Outcome :	- 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 structures, unions and user defined functions using C-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. - 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. Writing codes and execution of tasks based on Course-Paper-204. 2. Practical implementation of SQL and Procedural SQL based on Paper-205.
Teaching Methodology:	- Practical work, Lab sessions and hands on experience, Discussion, Self-Study
Evaluation Method:	30% Internal assessment. 70% External assessment. [For Internal and External Examination Suggested distribution of question weight will be : 20% - based on Unit-1 & Unit-2 of Course-paper-204 , 40% - based on Unit-3 to Unit-5 of Course-paper-204 and 40% - based on Course-paper-205.