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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, ઉદ્ધના-મગદલા 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.૧૮/૧૧/૨૦૧૯ ની સભાનાં ઠરાવ ક્રમાંક: 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.

બિડાણ: ઉપર મુજબ

ક્રમાંક : એકે./પરિપત્ર/૩૯૬૦/૨૦

તા.૦૩/૦૬/૨૦૨૦

R. B. P. T. 1

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:	<p>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.</p> <p>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.</p>
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	Organizational Structure & Behavior	2	0	2	3 Hours	70	30	100
201 - 2	Introduction to Internet & HTML							
202 - 1	Computerized Financial Accounting	3	0	3	3 Hours	70	30	100
202 - 2	Emerging Trends and Information Technology							
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.

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 :	<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 Content:	<p><u>UNIT-1:</u> Introduction to Internet</p> <p>1.1 Concepts of Internet</p> <p>1.1.1 Introduction to Internet</p> <p>1.1.2 Evolution of Internet</p> <p>1.1.3 Internet Services</p> <p>1.1.4 Advantages and Disadvantages of Internet</p> <p>1.2 Internet Connections</p> <p>1.2.1 Types of Internet connection (Dial-up Connection, Leased Connection, Broadband Connection, Wi-Fi, Mobile Broadband, Mobile Hotspot, Cable Model Connection)</p> <p>1.2.2 Working of Internet</p> <p>1.2.3 Difference between Internet, Intranet, Extranet</p>

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

2.5.1 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

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>,)

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>)

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:	<ol style="list-style-type: none"> 1. Internet- The Complete Reference, Margaret Levine Young- McGraw-Hill 2. The Rough Guide to The Internet- Rough Guides Limited 3. Introduction to Networking Rechar McMohan 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	<p>Unit 1. Introduction to Accounting System</p> <p>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</p> <p>Unit 2. Accounting Equation & Transaction Analysis</p> <p>2.1.Introduction to Assets, Liabilities, Equities 2.2.Concepts of Transaction Analysis 2.3.Classification of Accounts (Real Account, Personal Account, Nominal Account)</p> <p>Unit 3. Concepts of Book-Keeping</p> <p>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.</p> <p>Unit 4. Journal & Subsidiary Books (With Preliminary examples)</p> <p>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</p> <p>Unit 5. Concept of Accounting Mechanism</p> <p>5.1.Meaning and Definition of Ledger 5.2.Types of Ledger 5.3.Trial Balance and its objectives</p>
Reference Book	<ol style="list-style-type: none"> 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	<p>Technology changes very frequently. The information technology and software industry is emerging at very fast pace. Aim of this course is to provide</p> <ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> (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	<p>Unit 1. Software Fundamentals</p> <ol style="list-style-type: none"> 1.1.What is software 1.2.Types of software (System and Application Software) 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. <p>Unit 2. Introduction to File System and File Management</p> <ol style="list-style-type: none"> 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 <p>Unit 3. Case Study-1 :</p>

	<p>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.]</p> <p>3.1.1 Online product shopping websites: Case Study of Amazon, Snapdeal, Flipkart.</p> <p>3.1.2. Online reservation system : Case study of Railway Reservation System (IRCTC), Bus Reservation System (GSRCT).</p> <p>3.1.3 Online transactions processing</p> <p>3.2 Online Payments:</p> <p>3.2.1 Security measures of online payment system.</p> <p>3.2.2 Payment gateway</p> <p>3.2.3 Concepts of NEFT, RTGS, IMPS</p> <p>3.2.4 Online Payment Systems using mobile apps like PayTm, BHIM</p> <p>3.2.5 Online payments process through Credit and Debit Cards.</p> <p>Unit 4. Case Studies of Application Software (Any live System should be shown as case study):</p> <p>4.1. Production planning Application software system</p> <p>4.2. Accounting Application software system</p> <p>4.3. Inventory Applications:</p> <p>4.4. Mobile Application</p> <p>4.4.1 Fundamentals of mobile Applications</p> <p>4.4.2 Concepts of mobile apps and their OS(iOS,Android)</p> <p>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]</p> <p>5.1. Emerging trends and Buzz words (Only Basic concepts)</p> <p>5.1.1 Concepts of ERP (Fundamentals and importance)</p> <p>5.1.2 ETL concepts (Extraction, Transformation, Loading)</p> <p>5.1.3 Concepts of Data Warehousing</p> <p>5.1.4 Concepts of data science and its application areas.</p> <p>5.1.5 Concepts of Data Analytics and related tools</p> <p>5.1.6 Concepts of Business Analytics</p> <p>5.1.7 Concepts of cloud</p>
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
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	<p>30% Internal assessment.</p> <p>70% External assessment.</p>

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: <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 Content	<p>Unit 1. Operating System Concepts</p> <p>1.1.Evolution of Operating System & History</p> <p>1.2.Need of an Operating System</p> <p>1.3.Single User & Multi User Operating System</p> <p>1.4.Elements of an Operating System</p> <p>1.5.Operating System as a Resource Manager</p> <p>Unit 2. Introduction to File System and File Management</p> <p>2.1.File Concept</p> <p>2.2.Operations on File</p> <p>2.3.File Access Methods (Sequential Access and Direct Access)</p> <p>2.4. Directory Systems File Management Functions.</p> <p>2.5. File System and Directory Structure organization.</p> <p>2.6. File Protection.</p> <p>Unit 3. Introduction of Linux</p> <p>3.1.Introduction of Linux versions</p> <p>3.2.Components of Linux</p> <p>3.3.Comparison of Windows and Linux</p> <p>Unit 4. Linux Administration</p> <p>4.1.Installing Linux</p> <p>4.2.Installation of Open Source Software</p> <p>4.3.Maintaining User Accounts</p> <p>4.4.System Config Services (Package)</p> <p>Unit 5. Device Management</p> <p>5.1.Device Management Function</p> <p>5.2.Device Characteristics</p> <p>5.3.Disk space Management</p> <p>5.4.Allocation and Disk Scheduling Methods</p>
Reference Books	<ol style="list-style-type: none"> 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	<p>30% Internal assessment.</p> <p>70% External assessment.</p>

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:	<ul style="list-style-type: none"> 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:	<p>UNIT-1: Arrays, Structure & Union and User defined function in C programming Language:</p> <p>1.1 Concepts of Two-Dimensional Numeric Array:</p> <p>1.1.1 Declaring Two-Dimensional numeric array</p> <p>1.1.2 Two-Dimensional numeric Array operations (Addition, Subtraction, Multiplication, Transpose)</p> <p>1.1.3 Element Address in array (Row major and Column major)</p> <p>1.1.4 Two-Dimensional Character Array:</p> <p>1.1.4.1 Declaring & Initializing Two-Dimensional character array</p> <p>1.1.4.2 Two-Dimensional character Array operations (Searching elements, copying, merging, finding length of given string)</p> <p>1.2 Concepts of structure and Union:</p> <p>1.2.1 Defining, declaring and Initializing structure and Union</p> <p>1.2.2 typedef and accessing structure member</p> <p>1.2.3 Difference between structure and union</p> <p>1.3 User defined functions :</p> <p>1.3.1 Function return type, parameter list, local function variables</p> <p>1.3.2 Passing arguments to function</p> <p>1.3.3 Calling function from main() function or from other function.</p> <p>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.</p> <p>1.3.5 Recursive Function</p>

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).

	<p>5.1.3 Dictionary :</p> <p>5.1.3.1 Creating Dictionary, Adding, Accessing and Removing element</p> <p>5.1.3.2 Dictionary methods : get(), pop(), popitem(), clear(), copy()</p> <p>5.2 Introduction to Numpy and Pandas :</p> <p>5.2.1 Overview of numpy</p> <p>5.2.1.1 Numpy methods (Mean, Median, Mode, Standard Deviation and Variance)</p> <p>5.2.1.2 Implementation of Numpy methods on numeric dataset created using list.</p> <p>5.2.2 Pandas Dataframe:</p> <p>5.2.2.1 Creating dataframe using list</p> <p>5.2.2.2 Creating dataframe using dict of equal length list</p> <p>5.2.2.3 Reading data using csv file (read_csv())</p> <p>5.2.2.4 Retrieving rows and columns from dataframe using index</p> <p>5.2.2.5 Retrieving rows and columns using loc and iloc functions.</p>
References :	<p>1. Programming in C, Balaguruswami - TMH</p> <p>2. C Programming Language, Kernigham & Ritchie - TMH</p> <p>3. The spirit of C, Cooper H & Mullish H - Jaico Pub.</p> <p>4. Programming in C, Stephan Kochan - CBS</p> <p>5. Mastering Turbo C, Kelly & Bootle - BPB</p> <p>6. C Language Programming, Byron Gottfried –TMH</p> <p>7. Learning Python -Mark Lutz : O'Reilly Media</p> <p>8. Core Python Programming – by Wesley J Chun ISBN-13: 978- 0132269933</p> <p>9. Python for Everybody: Exploring Data in Python 3, by Charles Severance (Author), Aimee Andrion (Illustrator), Elliott Hauser (Editor), Sue Blumenberg (Editor)</p> <p>10. An Introduction to Python - by van Rossum Guido ISBN: 9780954161767, 0954161769</p> <p>11. Core Python Application Programming – by Wesley J Chun Prentice Hall</p>
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	<ol style="list-style-type: none"> 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	<p>Unit-1. Introduction of Relational model</p> <ol style="list-style-type: none"> 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 <p>Unit-2 Advanced SQL</p> <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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 <p>Unit-3: PL/SQL and conditional Statements :</p> <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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 <p>Unit-4 : Iterative Statements :</p> <ol style="list-style-type: none"> 4.1 Iterative statements : <ol style="list-style-type: none"> 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 :	<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 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 :	<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 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:	<ol style="list-style-type: none"> 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:	<ul style="list-style-type: none"> - Practical work, Lab sessions and hands on experience, Discussion, Self-Study
Evaluation Method:	<p>30% Internal assessment. 70% External assessment.</p> <p>[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.</p>