VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Bachelor of Computer Application

Name of Program	Bachelor of Computer Application
Abbreviation	BCA
Duration	3 Years (Regular)
Eligibility	Candidate must have passed standard 12th (H.S.C.) Examination in Science / Commerce stream through Gujarat Higher Secondary Board (G.H.S.E.B.) or any other equivalent board (C.B.S.E. / I.C.S.E.) with English subject. If a candidate has passed H.S.C. Examination from "B" group of science, then he/she is also eligible to get admission.
Objective of the Program	The basic objective of the program is to open a channel of admission for computing courses for students, who have done the 10+2 and are interested in taking computing/IT as a career. The program caters to the needs of the students aspiring to excel in the fields of computers. 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 programmers who can work in companies at entry levels and also independently.
Medium of Instruction	English
Program Structure	Semester-wise break up for the courses is given below:

SEMESTER - 1

Course Code	Title	Teaching per week		Course Credits	University Examination		Internal Marks	Total Marks
		Theory	Practical		Duration	Marks		
101	Communication Skills	2	0	2	3 Hrs	70	30	100
102	Mathematics	3	0	3	3 Hrs	70	30	100
103	Introduction to Computers	4	0	4	3 Hrs	70	30	100
104	Computer Programming & Programming Methodology	4	0	4	3 Hrs	70	30	100
105	Office Automation Tools	4	0	4	3 Hrs	70	30	100
106	Practical	0	12	6	5 Hrs	140	60	200
	Foundation Elective (to be selected from NCC / NSS / Saptadhara)	0	2	2				
Total		17	14	25		490	210	700

For Practical:

1. Batch Size – 30 Maximum
2. In case of more than 10 students in a batch, separate batch should be considered.
3. 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 External Practical Examination.

SEMESTER - 2

Course Code	Title	Teaching per week		Course Credits	University Examination		Internal Marks	Total Marks
		Theory	Practical		Duration	Marks		
201	Organization Structure Behaviour	2	0	2	3 Hrs	70	30	100
202	Computerised Financial Accounting	3	0	3	3 Hrs	70	30	100
203	Introduction to Operating System	4	0	4	3 Hrs	70	30	100
204	Advanced C Programming	4	0	4	3 Hrs	70	30	100
205	Database Management System (DBMS)	4	0	4	3 Hrs	70	30	100
206	Practical	0	12	6	5 Hrs	140	60	200
	Foundation Elective (to be selected from NCC / NSS / Saptadhara)	0	2	2				
Total		17	14	25		490	210	700

For Practical:

1. Batch Size – 30 Maximum
2. In case of more than 10 students in a batch, separate batch should be considered.
3. 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 External Practical Examination.

Program Passing Rules	As per University rules.

Course: 101 : Communication Skills

Course Code	101
Course Title	Communication Skills
Credit	2
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2014
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	Objective 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. Agreement between Subject and Verb 1.4. Basic rule of Composition 1.5. Paragraph Development 1.6. Vocabulary Development 1.7. Model Auxiliary 1.8. Active and Passive voice 1.9. Conjunction and prepositions **Unit 2. Writing Skills** 2.1. Guidelines for effective writing 2.2. Writing style of application 2.3. Personal Resume 2.4. Business letter and Memo including Requests, Complains, asking quotation etc. 2.5. Technical Report writing **Unit 3. Speaking and Discussion Skills** 3.1. Components of Effective talk / presentation 3.2. Planning of content of a talk / presentation 3.3. Use of Visual aids 3.4. Effective speaking skills 3.5. 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. Bharnagar & 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 2014
Purpose of Course	To develop mathematical abilities relevant to Computer Science.
Course Objective	Objective is to provide develop 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 & Boolean Algebra** 3.1. Introduction to logic 3.2. Truth Table 3.3. Definition & Examples of Boolean Algebra 3.4. Boolean Functions 3.5. Representation and minimization of Boolean Functions 3.6. Design example using Boolean algebra **Unit 4. Matrices and Determinants** 4.1. Matrices of order M * N 4.2. Row and Column transformation 4.3. Addition, Subtraction and multiplication of Matrices 4.4. Computation of Inverse 4.5. Cramer's Rule 4.6. 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 swathing circuits – Elliot Mendelson
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 103 : Introduction to Computers

Course Code	103
Course Title	Introduction to Computers
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2014
Purpose of Course	A computer is a device that can receive, process and store data. They are used as tools in every part of society together with the Internet. Computers nowadays are complex; there are a lot of different components inside them, and they all serve different purposes. They all need to work together for the computer to work; knowing how a computer works makes it easier to use a computer by being able to understand how a computer will respond.
Course Objective	Objective is to provide knowledge of functional units, number System, devices and memory & its storage.
Pre-requisite	Fundamental Knowledge of Computers
Course Out come	After studying this subject, students will get knowledge of functional units, number System, devices and memory & its storage.
Course Content	**Unit 1. Introduction** 1.1. History of Development 1.2. Generation of Computers 1.3. Types of Computers-Microcomputers, Minicomputers, Mainframes, Super Computers 1.4. Hardware, Software & Firmware **Unit 2. Basic Computer Architecture** 2.1. Block Diagram & Functional Units 2.2. Various hardware components: Mother board, Processor, Memory, ports 2.3. Phases of Machine cycle 2.3.1. Fetch Cycle 2.3.2. Execution Cycle 2.4. BIOS, POST **Unit 3. Number Systems** 3.1. Various number systems (Binary, Octal, Hexadecimal, Decimal) 3.2. Conversion among various number systems 3.3. Binary addition & subtraction 3.4. Hexadecimal addition & subtraction 3.5. Parity Scheme 3.6. ASCII Character Code **Unit 4. Memory** 4.1. Memory organization 4.2. Addressing Modes 4.3. Memory types: RAM, ROM, FLASH, PROM, EPROM, EEPROM

	4.4. Concepts of virtual memory, Cache memory **Unit 5. Storage Devices** 5.1. Floppy Disks: structure, reading/writing, formatting 5.2. Hard disk and its architecture 5.3. CD-ROM, DVD ROM 5.4. Back up Devices **Unit 6. I/O Devices** 6.1. Printers: Line printer, DOT matrix, Laser, Inkjet 6.2. Plotters: Scanners, OCR, OMR 6.3. Keyboard, Mouse 6.4. Other Devices: Joysticks, Touch pads, pens etc. 6.5. Monitors (CRT Flat Screen LCD)
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)
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 104 : Computer Programming & Programming Methodology

Course Code	104
Course Title	Computer Programming & Programming Methodology
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	June 2014
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.
Course Objective	Introduce students the rudiments of computer programming and programming methodology using C language.
Pre-requisite	None
Course outcome	The students will be able to form an original formulation of a computing problem to executable computer program using C.
Course Content	**Unit 1. Algorithm and Flowchart** **Unit 2. Programming Languages & Structured Programming** 2.1. Structured Programming 2.2. Concepts of Compiler / Interpreter Editor **Unit 3. Constant & Variables , Data Types** 3.1. Character Set 3.2. Identifiers, Key words, Data types 3.3. Constants- needs & Definition 3.4. Variables- needs & Definition 3.5. Storage Classes **Unit 4. Expression & Operators** 4.1. Operators 4.1.1. Arithmetic Operators 4.1.2. Unary Operators 4.1.3. Relational Operators 4.1.4. Logical Operators 4.1.5. Assignment Operators 4.1.6. Conditional Operator 4.2. Expression 4.2.1. Arithmetic expression 4.2.2. Boolean expression 4.3. Evaluation & Assignment of Expression **Unit 5. Input & Output Statements** 5.1. Formatted I/O statements (like scanf, printf) 5.2. Unformatted I/O statements (like *getchar(), getch(), getche(), putchar()*)

	Unit 6. **Control Statements** 6.1. *if* statement 6.1.1. Simple *if* statement 6.1.2. *if…else* statement 6.1.3. Nested *if* statement 6.2. *while loop* 6.3. *do…while loop* 6.4. *for loop* 6.5. *break and continue* statements 6.6. *switch* statement **Unit 7**. **Arrays** 7.1. One Dimensional Arrays 7.2. Sorting using One Dimensional Arrays 7.3. Concept of Two Dimensional Arrays. 7.4. String- Array of characters 7.5. String Manipulation **Unit 8**. **Built-in Functions** 8.1. Mathematical Functions 8.2. String Functions 8.3. Conversion Functions. **Unit 9. Debugging and Testing**
Reference Books	1. Programming in C, Balaguruswami – TMH 2. C: How to Program, Deitel & Deitel - PHI 3. C Programming Language, Kernigham & Ritchie - TMH 4. The spirit of C, Cooper H & Mullish H - Jaico Pub. 5. Programming in C, Stephan Kochan - CBS 6. Mastering Turbo C, Kelly & Bootle - BPB 7. C Language Programming, Byron Gottfried -TMH 8. Mastering Turbo C, Stan Kelly – BPB 9. Let us C, Yashwant Kanetkar - BPB Publication 10. Magnifying C, Arpita Gopal - PHI 11. Problem Solving with C, Somashekara - PHI 12. Progamming with ANSI and TURBO C, Ashok Kamthane - Pearson Eduction 13. Progamming 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 : Office Automation Tools

Course Code	105
Course Title	Office Automation Tools
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	June 2014
Purpose of Course	Use of modern office equipment in business or any office is intended to facilitate faster processing and delivery of information, accurate analysis of facts and figures, higher efficiency and productivity, and elimination of fatigue arising from performing repetitive jobs manually. Office Automation Tools help in Word processing, Worksheet and presentation
Course Objective	To make students understand and learn various Office Automation Tools like MS Word, MS Excel & MS PowerPoint.
Pre-requisite	Basic Knowledge of Computers
Course outcome	The students will be able to use various Office Automation Tools like MS Word, MS Excel & MS PowerPoint.
Course Content	**Unit 1. Introduction** 1.1. Concept of Windows, Icon, Menu 1.2. Desktop 1.3. Creating Folders and Shortcuts 1.4. Finding Files & Folders 1.5. Creating, Copying, Moving and Deleting files 1.6. Windows Explorer 1.7. Basic DOS Commands **Unit 2. Word Processing Package** 2.1. Typing, Editing, Proofing & reviewing 2.2. Formatting text & Paragraph 2.3. Automatics Formatting and Styles 2.4. Working with Tables 2.5. Graphics and Frames 2.6. Mail Merge **Unit 3. Spreadsheet package** 3.1. Concept of worksheet 3.2. Working & Editing in Workbooks 3.3. Creating Formats & Links 3.4. Protecting and Hiding data 3.5. Built in Functions (Mathematical, Statistical, String & Date) 3.6. Formatting a Worksheet & Creating graphics objects 3.7. Creating Charts (Graphics), Formatting and analyzing data 3.8. Organizing Data in a List (Data Management) 3.9. Sharing & Importing Data 3.10. Printing **Unit 4. Presentation Package** 4.1. Creating and Editing Slides

	4.2. Creating and Editing objects in the slide 4.3. Animation 4.4. Creating and Running Slide Show 4.5. Templates **Unit 5. Internet** 5.1. Concepts 5.2. Working 5.3. Mailing & surfing tools
Reference Books	1. EXCEL 2007 Made Simple by Satish Jain, BPB 2. Word 2007 by Rutkosky, BPB 3. PowerPoint 2007 Made Simple by Satish Jain, BPB 4. Mastering EXCEL 4 for Windows - Chester – BPB 5. Microsoft Office Word 2007 Plain & Simple, Joyce & Moon, PHI 6. Microsoft Office Excel 2007 Plain & Simple, Frye, PHI 7. Microsoft Office PowerPoint 2007 Plain & Simple, Muir, PHI 8. 2007 Microsoft Office System Plain & Simple, Joyce & Moon, PHI 9. EXCEL 5 for Windows Quick & Easy -Jones TECH 10. Excel Functions & formulas by Bernd Held, BPB 11. Mastering Windows 2000 Cowat-BPB 12. MS OFFICE 2007 - TRAINING GUIDE by Satish Jain, BPB 13. Internet : An Introduction Cisiems – Tata Mac , D. Boody –BPB 14. Internet 6 in 1 – Joe Krayuak & Harbraken, PHI 15. Internet access essential – Tittle & M. Robbins, AP professional 16. P C Software for Windows 2003 Made Simple, R K Taxali, TMH
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
Credit	6
Teaching per Week	12 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2014
Purpose of Course	Through practical implementation the students can understand learn computer programming in a better way.
Course Objective	The Objective of this course is to enable students to Solve practical Problem in P-104, P-105.
Pre-requisite	Basic Programming Skills
Course Out come	After completion of this course, the student will be able to write programs in C and also will be able to use Office Automation Tools.
Course Content	Practical based on Papers 104 and 105.
Reference Book	As per paper numbers 104 and 105
Teaching Methodology	Lab Work
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 201 : Organization Structure & Behaviour

Course Code	201
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 2014
Purpose of Course	In computer science, data structure is a particular way of organizing data in a computer so that it can be used efficiently. This course will help students understand it.
Course Objective	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** 1.1. What makes an organization 1.2. Structure of organization 1.3. What is Management 1.4. Scope of Management **Unit 2. Need for Management** 2.1. Role of Management 2.2. Manager's Role (Interpersonal Role, Information Role and Decisional Role) 2.3. Managerial Skills (Technical Skills, Human Skills, Conceptual Skills) **Unit 3. Attitude** 3.1. Meaning of Attitudes 3.2. Characteristics of Attitudes **Unit 4. Motivation** 4.1. What is motivation? 4.2. Nature and Characteristics of Motivation 4.3. Importance & Benefits of Motivation **Unit 5. Leadership** 5.1. What is Leadership? 5.2. Characteristics of Leadership 5.3. Leadership Styles 5.4. Leadership Skills (Technical Skills, Human Skills, Conceptual Skills. Personal Skills) **Unit 6. BPO & Call Center** 6.1. What is B.P.O? 6.2. What is out-sourcing? Benefits of outsourcing

	6.3. What is Call Center? 6.4. Call center 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 Centers – 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: 202 : Computerized Financial Accounting

Course Code	202
Course Title	Computerized Financial Accounting
Credit	3
Teaching per Week	3 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2014
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	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) **Unit 2. Accounting Concepts** **Unit 3. Accounting Equation & Transaction Analysis** 3.1. Introduction to Assets, Liabilities, Equities 3.2. Concepts of Transaction Analysis 3.3. Classification of Accounts (Real Account, Personal Account, Nominal Account) **Unit 4. Concepts of Book-Keeping** 4.1. Introduction of Single Entry System and its advantages/disadvantages 4.2. Introduction of Double Entry System and its advantages 4.3. Types of Business Transaction 4.3.1. Cash Transaction 4.3.2. Credit Transaction 4.3.3. Barter Transaction 4.4. Concepts of important Terminologies: Opening Stock, Closing Stock, Goods, Inventory, Assets, Liabilities, Capital, Debit, Debtors, Creditors, Income, Expenses, Loss, Profit, Credit, Debit. **Unit 5. Journal & Subsidiary Books (With Preliminary examples)** 5.1. Meaning of Journal 5.2. Format of Journal 5.3. Concept and format of cash Book

	5.4. Concept and format of Petty cash Book 5.5. Concept and format of Purchase, Sale, Purchase Return and Sale Return Book **Unit 6. Concept of Accounting Mechanism** 6.1. Meaning and Definition of Ledger 6.2. Types of Ledger 6.3. 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: 203 : Introduction to Operating System

Course Code	203
Course Title	Introduction to Operating System
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2014
Purpose of Course	An Operating System (OS) is 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	1. To make students understand functionality provided by an Operating System. 2. Students become aware with Basic concepts of Windows O.S. Management. 3. Students learn device management
Pre-requisite	Basic Knowledge of Operating System
Course Out come	After studying this, students will be able to understand what is role of OS, how process management, memory management, files management is performed by OS. After Completion of the course student will be able to develop applications that better coordinate with respective OS which is so vital.
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. Microsoft Windows Management** 3.1. System properties using My Computer 3.2. Concept of Domain 3.3. Windows Administration Tools 3.4. Event Viewer 3.5. Computer Management 3.6. System Tools 3.7. Storage 3.8. Introduction to Local Security Policy 3.9. Windows MMC & Snap-ins 3.10. System Configuration Utility (msConfig)

	Unit 4. Device Management 4.1. Device Management Function 4.2. Device Characteristics 4.3. Disk space Management 4.4. 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
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 204 : Advanced C Programming

Course Code	204
Course Title	Advanced C Programming
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2014
Purpose of Course	Learn the advanced features of C language that were not covered in earlier semester.
Course Objective	Introduce to students the advanced topics of C language.
Pre-requisite	Fundamental knowledge of computer programming using 'C' language.
Course Out come	The students will be able to develop program using advanced features of C.
Course Content	**Unit 1. Pre-processor Directives** 1.1. Macro Definitions (#define, #undef) 1.2. File Inclusion (#include) 1.3. Conditional Compilation (#ifdef, #ifndef, #if, #endif, #else, #elif) **Unit 2. Arrays** 2.1. Multidimensional Character Array 2.2. Passing array to user defined functions (Discuss this topic after discussing the topic of User Defined Functions). **Unit 3. Structure & Union** 3.1. Defining Structure 3.2. Processing Structure 3.3. Array of Structure 3.4. Structure and Pointer 3.5. Passing Structure to a Function 3.6. Self Referential Structure 3.7. Defining Union 3.8. Comparison between Structure and Union **Unit 4. User Defined Functions** 4.1. Definition and Accessing of a Function 4.2. Function Prototype 4.3. Recursive Functions 4.4. Call by Value 4.5. Call by Reference (Discuss this topic after discussing the topic of Pointers) **Unit 5. Pointer** 5.1. Pointer Variable Declaration & Memory Storage 5.2. Address and Value Operators 5.3. Pointer Arithmetic 5.4. Passing pointers to functions 5.5. Pointer to Array 5.5.1. Pointer to One Dimensional Array

	5.5.2. Pointer to Multi-Dimensional Array 5.6. Array of Pointer **Unit 6. File Handling in C** 6.1. Types of Files in C 6.2. Defining, Opening & Closing a File 6.3. Read, Write & Append operations in a File. 6.4. Reading & Writing Records (Structures) to a File 6.5. Random Access of Files 6.5.1. File positions: *ftell()* and *fseek()* 6.5.2. *rewind()* 6.5.3. *fflush()* **Unit 7. Other Features of C** 7.1. Command Line Arguments 7.2. Storage Classes & their use 7.2.1. Automatic Storage Class 7.2.2. Register Storage Class 7.2.3. Static Storage Class 7.2.4. Extern Storage Class 7.3. Enumerated Data Type (*enum*) 7.4. Type Definitions (*typedef*) 7.5. Bitwise Operators 7.5.1. Shift Operators (Right Shift & Left Shift) 7.5.2. The AND Operator & AND Masking 7.5.3. The OR Operator & OR Masking 7.5.4. The XOR Operator & XOR Masking
Reference Books	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. Mastering Turbo C, Stan Kelly – BPB 8. Let us C, Yashwant Kanetkar - BPB Publication 9. Magnifying C, Arpita Gopal - PHI 10. Problem Solving with C, Somashekara - PHI 11. Progamming with ANSI and TURBO C, Ashok Kamthane - Pearson Eduction 12. Progamming 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: 205 : Database Management System (DBMS)

Course Code	205
Course Title	Database Management System (DBMS)
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2014
Purpose of Course	Organizations use large amounts of data. A Database Management System (DBMS) is a software tool that makes it possible to organize data in a database.
Course Objective	1. To make students understand the basic concepts of Database. 2. Create Databases and Manage Databases using Structured Query Language (SQL). 3. They become aware with Normalization and its importance in RDBMS.
Pre-requisite	Basic Operating Knowledge of Computer and Basic Knowledge of Programming.
Course Out come	After studying this, students will be able to understand what is DDL? What is DML? and what is DCL?. After Completion of the course student will be able to prepare a complete database for their application
Course Content	**Unit 1. Introduction to Database Systems** 1.1. Drawbacks of Conventional File Processing System 1.2. Need of Database Management System 1.3. Organization of database (Physical, Conceptual, Logical) 1.4. Data Models 1.4.1. Object based data models: E-R Model 1.4.1.1. E-R Diagram 1.4.1.2. Entities & entity sets 1.4.1.3. Types of relationships 1.4.2.Record based data models: Network, Hierarchical & Relational 1.4.3. Physical data models 1.5. Components of Data Base Management System 1.5.1. Query Language: DDL, DML, TCL 1.5.2. Database Users: DBA, Programmer, Other Users 1.6. Data independence: Logical & Physical 1.7. Functional Dependencies & Closure of Functional Dependencies 1.8. Keys: Super Key, Candidate Key, Primary Key, Alternate Key, Foreign Key 1.9. Constraints 1.9.1. Domain Integrity 1.9.2. Referential Integrity 1.9.3. Entity Integrity **2. Normalization** 2.1. Need of Normalization (Consequences of Bad Design-Insert, Update & Delete Anomalies)

	2.2. Normalization 2.2.1. First Normal Form 2.2.2. Second Normal Form 2.2.3. Third Normal Form 2.2.4. BCNF **Unit 3. Microsoft Access** 3.1. Working with databases & tables 3.2. Managing Constraints & Relationships 3.3. Using SQL Queries
Reference Books	1. Database System Concepts: – Henry F. Korth & Abrahim Silberschatz :- IMR 2. Introduction to Database Management System :– Bipin C. Desai :- Galgotia 3. Principles of database systems :– Jeffery Ullman :– Galgotia Publication 4. An introduction to Database Systems: – C.J. Date :– Addison Wesley 5. Introduction to database Management :– Navin Prakash :-TM 6. Access- The Complete Reference: – Virginia Andersen :– McGraw-Hill 7. Access Database Design & Programming :– Steven Roman: – O'Reilly 8. ABC of Microsoft Access:- Cowart Robert:-BPB Publication
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**
Credit	6
Teaching per Week	12 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2014
Purpose of Course	Give hands on experience of practical problems.
Course Objective	The Objective of this course is to enable students to Solve practical Problem in P-204, P-205.
Pre-requisite	Basic Programming Skills
Course Out come	After completion of this course, the student will be able to write programs in C and also will be able to use Office Automation Tools.
Course Content	Practical based on Papers 204 and 205.
Reference Book	As per paper numbers 204 & 205
Teaching Methodology	Lab. Work
Evaluation Method	30% Internal assessment. 70% External assessment.