# 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 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.<br><br>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 courses is given below: |

**Semester – I**

| 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 Electives (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 the External Practical Examination.

**Semester – II**

| 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 | Operating System – I | 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 Electives (to be selected from NCC / NSS / Saptadhara) | 0 | 2 | 2 | | | | |
| Total | | 17 | 14 | 25 | | 490 | 210 | 700 |

For Practical:

4. Batch Size – 30 Maximum
5. In case of more than 10 students in a batch, separate batch should be considered.
6. 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 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 2017 |
| 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**<br>1.1. Spoken and conversation for Greetings, Requests, Invitation, Permission, Thanks etc.<br>1.2. Basic Sentence patterns<br>1.3. Basic rule of Composition<br>1.4. Vocabulary Development<br>1.5. Paragraph Development<br><br>**Unit 2. Fundamentals of Grammar**<br>2.1. Agreement between Subject and Verb<br>2.2. Model Auxiliary<br>2.3. Active and Passive voice<br>2.4. Conjunction and prepositions<br><br>**Unit 3. Writing Skills**<br>3.1. Guidelines for effective writing<br>3.2. Writing style of application<br>3.3. Personal Resume<br><br>**Unit 4. Business Letter and Report Writing Skills**<br>4.1. Business letter and Memo including Requests, Complaints, Quotation etc.<br>4.2. Technical Report writing<br><br>**Unit 5. Speaking and Discussion Skills**<br>5.1. Components of Effective talk / presentation<br>5.2. Planning of content of a talk / presentation<br>5.3. Use of Visual aids<br>5.4. Effective speaking skills<br>5.5. Discussion skills |
| | |
| Reference Books | 1. Handbook of practical Communication skills – Chrisle W. JAICO<br>2. Basic Managerial Skills for all – S. J. McGrath - PHI<br>3. Reading to learn – Sheila Smith & Thomas M. Methuen (London)<br>4. Communication conversation Practice _ Tata McGraw Hill<br>5. Communication in English – R. P. Bhatnagar & R. T. Bell – Orient Longman<br>6. Good English – G. H. Vallins – Rups & Co. |

| | |
|---|---|
| | 7. Let's talk English – M. I. Joshi<br>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.<br>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 2017 |
| 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**<br>1.1. Introduction<br>1.2. Representation<br>1.3. Operation and its properties<br>1.4. Venn Diagram<br>1.5. Cartesian product and graph<br><br>**Unit 2. Functions**<br>2.1. Definition<br>2.2. Types – Domain and Range<br>2.3. Construction and functions<br><br>**Unit 3. Mathematical Logic**<br>3.1. Introduction to logic<br>3.2. Truth Table<br><br>**Unit 4. Boolean Algebra**<br>4.1 Definition & Examples of Boolean Algebra<br>4.2 Boolean Functions<br>4.3 Representation and minimization of Boolean Functions<br>4.4 Design example using Boolean algebra<br><br>**Unit 5. Matrices and Determinants**<br>5.1. Matrices of order M * N<br>5.2. Row and Column transformation<br>5.3. Addition, Subtraction and multiplication of Matrices<br>5.4. Computation of Inverse<br>5.5. Cramer's Rule<br>5.6. Business Application of Matrices |
| Reference Books | 1. Co-ordinate Geometry – Shanti Narayan<br>2. Linear Algebra – Sushoma Verma<br>3. Advanced Mathematics – B.S. Shah & Co.<br>4. Schaum's Outline of Boolean algebra and switching circuits – Elliot Mendelson<br>5. Digital Computer Fundamentals - Tata McGraw Hill, 6th Edition, Thomas C. Bartee<br>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.<br>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 2017 |
| 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 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 | The objective of this course 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**<br>1.1. History of Development<br>1.2. Generation of Computers<br>1.3. Types of Computers-Microcomputers, Minicomputers, Mainframes, Super Computers<br>1.4. Hardware, Software & Firmware<br><br>**Unit 2. Basic Computer Architecture**<br>2.1. Block Diagram & Functional Units<br>2.2. Various hardware components: Mother board, Processor, Memory, ports<br>2.3. Phases of Machine cycle<br>2.3.1.Fetch Cycle<br>2.3.2.Execution Cycle<br>2.4. BIOS, POST<br><br>**Unit 3. Number Systems**<br>3.1. Various number systems (Binary, Octal, Hexadecimal, Decimal)<br>3.2. Conversion among various number systems (Consider all possible combinations from one number system to other number system)<br>3.3. Binary addition & subtraction<br>3.4. Hexadecimal addition & subtraction<br>3.5. Parity Scheme<br>3.6. ASCII Character Code<br><br>**Unit 4. Memory**<br>4.1. Memory organization<br>4.2. Addressing Modes<br>4.3. Memory types: RAM, ROM, FLASH, PROM, EPROM, EEPROM<br>4.4. Concepts of virtual memory, Cache memory |

| | |
|---|---|
| | **Unit 5. Storage and I/O Devices**<br>5.1. Hard disk and its architecture<br>5.2. Back up Devices (Optical Disc, USB)<br>5.3. Floppy Disks, CD-ROM, DVD ROM<br>5.4. Keyboard, Mouse<br>5.5. Printers:<br>5.5.1.Impact: Dot Matrix, Chain, Drum<br>5.5.2.Non-Impact: Inkjet, Laser<br>5.6. Plotters, Scanners, OCR, OMR<br>5.7. Monitors (CRT, Flat Screen LCD) |
| | |
| Reference Books | 1. How computer works: Ron White – Tech media<br>2. Introduction to Computers – Peter Norton<br>3. Fundamentals of Computers: V. Rajaraman<br>4. Introduction to Computer Science – Pearson Education<br>5. Computer Fundamentals: Pradeep K. Sinha & Priti Sinha (BPB) |
| | |
| Teaching Methodology | Class Work, Discussion, Self-Study, Seminars and/or Assignments |
| Evaluation Method | 30% Internal assessment.<br>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 2017 |
| 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 | The object of this course is to introduce students the rudiments of computer programming and programming methodology using C language. |
| Pre-requisite | None |
| Course outcome | The students will be able to formulate a computing problem to executable computer program using C language. |
| | |
| Course Content | **Unit 1. Introduction**<br>1.1 Algorithm and Flowchart<br>1.2 Structured Programming<br>1.3 Concepts of Compiler, Interpreter, Editor, Debugging & Testing<br>1.4 Character Set<br>1.5 Identifiers, Key words, Data types<br>1.6 Constants and Variables – Needs & Definition<br><br>**Unit 2. Expression & Operators**<br>2.1 Operators<br>2.1.1 Arithmetic Operators<br>2.1.2 Unary Operators<br>2.1.3 Relational Operators<br>2.1.4 Logical Operators<br>2.1.5 Assignment Operators<br>2.1.6 Conditional Operator<br>2.2 Expression<br>2.2.1 Arithmetic expression<br>2.2.2 Boolean expression<br>2.3 Evaluation & Assignment of Expression<br><br>**Unit 3. Input/Output Statements & Built-in Functions**<br>3.1. Formatted I/O statements (like *scanf*, *printf*)<br>3.2. Unformatted I/O statements (like *getchar(), getch(), getche(), putchar()*)<br>3.3. Mathematical Functions<br>3.4. String Functions<br>3.5. Conversion Functions<br><br>**Unit 4. Control Statements**<br>4.1. *if* statement<br>4.1.1.Simple *if* statement<br>4.1.2.*if...else* statement |

| | |
|---|---|
| | 4.1.3.Nested *if* statement<br>4.2. *while loop*<br>4.3. *do…while loop*<br>4.4. *for loop*<br>4.5. *break and continue* statements<br>4.6. *switch* statement<br><br>**Unit 5**. **Arrays**<br>5.1. One Dimensional Arrays<br>5.2. Sorting using One Dimensional Arrays<br>5.3. Concept of Two Dimensional Arrays<br>5.4. String- Array of characters<br>5.5. String Manipulation |
| | |
| Reference Books | 1. Programming in C, Balaguruswami – TMH<br>2. C: How to Program, Deitel & Deitel - PHI<br>3. C Programming Language, Kernigham & Ritchie - TMH<br>4. Programming in C, Stephan Kochan - CBS<br>5. Mastering Turbo C, Kelly & Bootle - BPB<br>6. C Language Programming – Byron Gottfried - TMH<br>7. Let us C, Yashwant Kanetkar - BPB Publication<br>8. Magnifying C, Arpita Gopal - PHI<br>9. Problem Solving with C, Somashekara - PHI<br>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: 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 2017 |
| 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, managing Worksheets and preparing Presentations. |
| Course Objective | The objective of this course is to make students understand and learn various Office Automation Tools like Word processor, Spreadsheet program & Presentation program. |
| Pre-requisite | Basic Knowledge of Computers |
| Course outcome | The students will be able to use various Office Automation Tools like Word processor, Spreadsheet software & Presentation software. |
| | |
| Course Content | **Unit 1. Introduction**<br>1.1. Concept of Windows, Icon, Menu<br>1.2. Desktop<br>1.3. Creating Folders and Shortcuts<br>1.4. Finding Files & Folders<br>1.5. Creating, Copying, Moving and Deleting files<br>1.6. Windows Explorer<br>1.7. Basic DOS Commands<br><br>**Unit 2. Word Processor**<br>2.1. Typing, Editing, Proofing & reviewing<br>2.2. Formatting text & Paragraph<br>2.3. Automatics Formatting and Styles<br>2.4. Working with Tables<br>2.5. Graphics and Frames<br>2.6. Mail Merge<br><br>**Unit 3. Spreadsheet Software**<br>3.1. Concept of worksheet<br>3.2. Working & Editing in Workbooks<br>3.3. Creating Formats & Links<br>3.4. Protecting and Hiding data<br>3.5. Built in Functions (Mathematical, Statistical, String & Date)<br>3.6. Formatting a Worksheet<br>3.7. Creating Charts (Graphics), Formatting and Analysing data<br>3.8. Organizing Data in a List (Data Management)<br>3.9. Printing<br><br>**Unit 4. Presentation Software**<br>4.1. Creating and Editing Slides<br>4.2. Creating and Editing objects in the slide<br>4.3. Animation<br>4.4. Creating and Running Slide Show<br>4.5. Templates |

| | |
|---|---|
| | **Unit 5. Internet**<br>5.1. Concepts<br>5.2. Working<br>5.3. Mailing & surfing tools<br>5.4. Online Data Backup |
| | |
| Reference Books | 1. OpenOffice.org For Dummies - Gurdy Leete, Ellen Finkelstein, Mary Leete - Wiley Pub.<br>2. Beginning OpenOffice 3: From Novice to Professional - Andy Channellle - Apress Pub.<br>3. The OpenOffice.org 2 Guidebook - Solveig Haugland<br>4. Taming Apache OpenOffice: Getting Started - Jean Hollis Weber - Friends of OpenDocument Inc.<br>5. Open Office Basic: An Introduction - James Steinberg - Gold Turtle Pub.<br>6. PC Software for Windows 2003 Made Simple, - R K Taxali, - TMH<br>7. 2007 Microsoft Office System Plain & Simple, Joyce & Moon, - PHI<br>8. Internet 6 in 1 – Joe Krayuak & Harbraken, PHI<br>9. Introduction to Computer Science-Pearson Education-ITL ESL<br>10. Introduction to Computers-Peter Norton-The McGraw-Hill Companies |
| | |
| Teaching Methodology | Class Work, Discussion, Self-Study, Seminars and/or Assignments |
| Evaluation Method | 30% Internal assessment.<br>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 2017 |
| 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 Courses 104 & 105. |
| Pre-requisite | Basic Programming Skills |
| Course Out come | After completion of this course, the students will be able to write programs in C language and also will be able to use Office Automation Tools. |
| | |
| Course Content | Practical based on Courses 104 and 105. |
| | |
| Reference Book | As per paper numbers 104 and 105 |
| | |
| Teaching Methodology | Lab Work |
| Evaluation Method | 30% Internal assessment.<br>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 2017 |
| 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**<br>1.1. What makes an organization<br>1.2. Structure of organization<br>1.3. What is Management<br>1.4. Scope of Management<br>1.5. Role of Management<br>1.6. Manager's Role (Interpersonal Role, Information Role and Decisional Role)<br>1.7. Managerial Skills (Technical Skills, Human Skills, Conceptual Skills)<br><br>**Unit 2. Attitude**<br>2.1. Meaning of Attitudes<br>2.2. Characteristics of Attitudes<br><br>**Unit 3. Motivation**<br>3.1. What is motivation?<br>3.2. Nature and Characteristics of Motivation<br>3.3. Importance & Benefits of Motivation<br><br>**Unit 4. Leadership**<br>4.1. What is Leadership?<br>4.2. Characteristics of Leadership<br>4.3. Leadership Styles<br>4.4. Leadership Skills (Technical Skills, Human Skills, Conceptual Skills. Personal Skills)<br><br>**Unit 5. BPO & Call Centre**<br>5.1. What is B.P.O?<br>5.2. What is out-sourcing? Benefits of outsourcing<br>5.3. What is Call Centre?<br>5.4. Call Centre setup & functions |
| | |
| Reference Book | 1. Management & Organization Development – By Ahmed Abod Rachna Prakashan, New Delhi<br>2. Organization Behaviour – By Aplewhite Philip, Prentice hall |

| | |
|---|---|
| | 3. Management & Organization Development – By Argyris Chris, McGraw Hill<br>4. Human Behaviour at work – By Davis Keeth, Tata McGraw Hill<br>5. Organization Behaviour – By L. M. Prasad.<br>6. Principles and Practices of Management – By L. M. Prasad.<br>7. Managing People at work – By Harris O Jeff, John Wiley & Sons Publication<br>8. Call Centres – By S. Pankaj (APII Publication) |
| | |
| Teaching Methodology | Class Work, Discussion, Self-Study, Seminars and/or Assignments |
| Evaluation Method | 30% Internal assessment.<br>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 2017 |
| 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**<br>1.1. Meaning & Definition of Accounting<br>1.2. Objectives of Accounting<br>1.3. Concepts and Features of Book Keeping<br>1.4. Branches of Accounting (Financial Management, Cust)<br>1.5. Basis of Accounting (Accrual Bases, Cash Bases)<br>1.6. Accounting Concepts<br><br>**Unit 2. Accounting Equation & Transaction Analysis**<br>2.1. Introduction to Assets, Liabilities, Equities<br>2.2. Concepts of Transaction Analysis<br>2.3. Classification of Accounts (Real Account, Personal Account, Nominal Account)<br><br>**Unit 3. Concepts of Book-Keeping**<br>3.1. Introduction of Single Entry System and its advantages/disadvantages<br>3.2. Introduction of Double Entry System and its advantages<br>3.3. Types of Business Transaction<br>3.3.1. Cash Transaction<br>3.3.2. Credit Transaction<br>3.3.3. Barter Transaction<br>3.4. Concepts of important Terminologies: Opening Stock, Closing Stock, Goods, Inventory, Assets, Liabilities, Capital, Debit, Debtors, Creditors, Income, Expenses, Loss, Profit, Credit, Debit.<br><br>**Unit 4. Journal & Subsidiary Books (With Preliminary examples)**<br>4.1. Meaning of Journal<br>4.2. Format of Journal<br>4.3. Concept and format of cash Book<br>4.4. Concept and format of Petty cash Book<br>4.5. Concept and format of Purchase, Sale, Purchase Return and Sale Return Book<br><br>**Unit 5. Concept of Accounting Mechanism** |

| | |
|---|---|
| | 5.1. Meaning and Definition of Ledger<br>5.2. Types of Ledger<br>5.3. Trial Balance and its objectives |
| | |
| Reference Book | 1. Accounting for Management – By Dr. Hawaharlal<br>2. Financial Management - By Dr. S. N. Maheshwari<br>3. Accounting for Management – By S. K. Bhattacharya & John Deardon<br>4. Advanced Accountancy – By S. P. Jain & K. I. Narang<br>5. Implementing Tally 6.3 – By K. K. Nathani – BPB Publication<br>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.<br>70% External assessment. |

## Course 203: Operating System - I

| | |
|---|---|
| Course Code | 203 |
| Course Title | Operating System - I |
| Credit | 4 |
| Teaching per Week | 4 Hrs |
| Minimum weeks per Semester | 15 (Including Class work, examination, preparation etc.) |
| Review / Revision | June 2017 |
| 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:<br>1. To make students understand functionality provided by an Operating System.<br>2. To make students aware with basic concepts of Windows O. S. Management.<br>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 is the role of an OS; 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**<br>1.1. Evolution of Operating System & History<br>1.2. Need of an Operating System<br>1.3. Single User & Multi User Operating System<br>1.4. Elements of an Operating System<br>1.5. Operating System as a Resource Manager<br><br>**Unit 2. Introduction to File System and File Management**<br>2.1. File Concept<br>2.2. Operations on File<br>2.3. File Access Methods (Sequential Access and Direct Access)<br>2.4. Directory Systems File Management Functions.<br>2.5. File System and Directory Structure organization.<br>2.6. File Protection.<br><br>**Unit 3. Introduction of Linux**<br>3.1. Introduction of Linux versions<br>3.2. Components of Linux<br>3.3. Comparison of Windows and Linux<br><br>**Unit 4. Linux Administration**<br>4.1. Installing Linux<br>4.2. Installation of Open Source Software<br>4.3. Maintaining User Accounts<br>4.4. System Config Services (Package)<br><br>**Unit 5. Device Management**<br>5.1. Device Management Function<br>5.2. Device Characteristics<br>5.3. Disk space Management<br>5.4. Allocation and Disk Scheduling Methods |

| | |
|---|---|
| Reference Books | 1. Operating System Concepts: – James Peterson: – McGraw Hill<br>2. Operating System: – Stallings - PHI<br>3. Operating System Principles: – Silberschatz, Galvin, Gagne - Willey, India<br>4. Operating Systems – A. S. Godbole – Tata McGraw Hill<br>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.<br>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 2017 |
| Purpose of Course | Learn the advanced features of C language that were not covered in earlier semester. |
| Course Objective | The objective of this course is to 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**<br>1.1. Macro Definitions (#define, #undef)<br>1.2. File Inclusion (#include)<br>1.3. Conditional Compilation (#ifdef, #ifndef, #if, #endif, #else, #elif)<br><br>**Unit 2. Arrays, Structure & Union**<br>2.1. Multidimensional Character Array<br>2.2. Defining Structure<br>2.3. Processing Structure<br>2.4. Array of Structure<br>2.5. Self-Referential Structure<br>2.6. Defining Union<br>2.7. Comparison between Structure and Union<br><br>**Unit 3. User Defined Functions & Pointers**<br>3.1. User Defined Functions<br>3.1.1.Definition and Accessing of a Function<br>3.1.2.Function Prototype<br>3.1.3.Recursive Function<br>3.1.4.Call by Value<br>3.1.5.Passing array to user-defined functions<br>3.2. Pointers in C<br>3.2.1.Pointer Variable Declaration & Memory Storage<br>3.2.2.Address and Value Operators<br>3.2.3.Pointer Arithmetic<br>3.2.4.Pointer to Array<br>3.2.4.1. Pointer to One Dimensional Array<br>3.2.4.2. Pointer to Multi-Dimensional Array<br>3.3. Array of Pointer<br>3.4. Passing pointers to functions<br>3.5. Call by Reference<br>3.6. Structure and Pointer<br>3.7. Passing structure to a function<br><br>**Unit 4. File Handling in C**<br>4.1. Types of Files in C<br>4.2. Defining, Opening & Closing a File<br>4.3. Read, Write & Append operations in a File. |

| | |
|---|---|
| | 4.4. Reading & Writing Records (Structures) to a File<br>4.5. Random Access of Files<br>4.5.1.File positions: *ftell()* and *fseek()*<br>4.5.2.*rewind()*<br>4.5.3.*fflush()*<br><br>**Unit 5. Other Features of C**<br>5.1. Command Line Arguments<br>5.2. Storage Classes & their use<br>5.2.1.Automatic Storage Class<br>5.2.2.Register Storage Class<br>5.2.3.Static Storage Class<br>5.2.4.Extern Storage Class<br>5.3. Enumerated Data Type (*enum*)<br>5.4. Type Definitions (*typedef*)<br>5.5. Bitwise Operators<br>5.5.1.Shift Operators (Right Shift & Left Shift)<br>5.5.2.The AND Operator & AND Masking<br>5.5.3.The OR Operator & OR Masking<br>5.5.4.The XOR Operator & XOR Masking |
| | |
| Reference Books | 1. Programming in C, Balaguruswami - TMH<br>2. C Programming Language, Kernigham & Ritchie - TMH<br>3. The spirit of C, Cooper H & Mullish H - Jaico Pub.<br>4. Programming in C, Stephan Kochan - CBS<br>5. Mastering Turbo C, Kelly & Bootle - BPB<br>6. C Language Programming, Byron Gottfried -TMH<br>7. Mastering Turbo C, Stan Kelly – BPB<br>8. Let us C, Yashwant Kanetkar - BPB Publication<br>9. Magnifying C, Arpita Gopal - PHI<br>10. Problem Solving with C, Somashekara - PHI |
| | |
| Teaching Methodology | Class Work, Discussion, Self-Study, Seminars and/or Assignments |
| Evaluation Method | 30% Internal assessment.<br>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 2017 |
| Purpose of Course | Organizations use large amount of data. A Database Management System (DBMS) is a software tool that makes it possible to organize data in a database. |
| Course Objective | The objective of this course is:<br>1. To make students understand the basic concepts of Database.<br>2. To teach students how to create & manage Databases using Structured Query Language (SQL).<br>3. To teach Normalization and its importance in DBMS. |
| Pre-requisite | Basic Operating Knowledge of Computer and Basic Knowledge of Programming. |
| Course Out come | After studying this, students will get the working knowledge of DDL, DML and DCL. The students will be able to prepare a complete database for their application. |
| | |
| Course Content | **Unit 1. Introduction to Database Systems**<br>1.1. Drawbacks of Conventional File Processing System<br>1.2. Need of Database Management System<br>1.3. Organization of database (Physical, Conceptual, Logical)<br>1.4. Data Models<br>1.4.1.Object based data models: E-R Model<br>1.4.1.1. E-R Diagram<br>1.4.1.2. Entities & entity sets<br>1.4.1.3. Strong & weak entity sets<br>1.4.1.4. Types of relationships<br>1.4.2.Record based data models: Network, Hierarchical & Relational<br>1.4.3.Physical data models<br><br>**Unit 2. Concepts of DBMS**<br>2.1. Components of Data Base Management System<br>2.1.1.Query Language: DDL, DML, TCL<br>2.1.2.Database Users: DBA, Programmer, Other Users<br>2.2. Data Independence: Logical & Physical<br>2.3. Functional Dependencies & Closure of Functional Dependencies<br><br>**Unit 3. Types of Keys & Data Integrity**<br>3.1. Keys: Super Key, Candidate Key, Primary Key, Alternate Key, Foreign Key<br>3.2. Constraints<br>3.2.1.Domain Integrity<br>3.2.2.Referential Integrity<br>3.2.3.Entity Integrity<br><br>**Unit 4. Normalization**<br>4.1. Need of Normalization (Consequences of Bad Design-Insert, Update & Delete Anomalies)<br>4.2. Normalization |

| | |
|---|---|
| | 4.2.1.First Normal Form<br>4.2.2.Second Normal Form<br>4.2.3.Third Normal Form<br>4.2.4.BCNF<br><br>**Unit 5. Open Office Base**<br>5.1. Working with databases & tables<br>5.2. Managing Constraints & Relationships<br>5.3. Using SQL Queries |
| Reference Books | 1. Database System Concepts: – Henry F. Korth & Abrahim Silberschatz – McGraw Hill Education<br>2. Introduction to Database Management System– Bipin C. Desai – Galgotia Publication<br>3. Principles of database systems – Jeffery Ullman – Galgotia Publication<br>4. An introduction to Database Systems – C. J. Date – Addison Wesley<br>5. Introduction to database Management – Navin Prakash -TMH<br>6. Learn Open Office 3.1 Base – AZIMUTH<br>7. OpenOffice 3.4 Volume III: Base-Christopher N. Cain, Riley W. Walker-Quantum Scientific Publishing<br>8. Discovering SQL-A Hands-on Guide for Beginner-Alex Kriegel-Wrox Publication<br>9. 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.<br>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 2017 |
| Purpose of Course | Give hands on experience of practical problems. |
| Course Objective | The Objective of this course is to enable students Solve practical problems in courses 204 & 205. |
| Pre-requisite | Basic Programming Skills. |
| Course Out come | After completion of this course, the students will be able to write programs using advanced features of C language and also will understand basic concepts of Database Management System and build small database applications. |
| | |
| Course Content | Practical based on courses 204 and 205. |
| | |
| Reference Book | As per paper numbers 204 & 205 |
| | |
| Teaching Methodology | Lab. Work |
| Evaluation Method | 30% Internal assessment.<br>70% External assessment. |