GRADUATE COURSE

BACHELOR IN COMPUTER APPLICATION (BCA)

Objective: The BCA programme provides an understanding and skills related to the use of Computers and its application. The BCA programme provides a platform for possibility of moving on to MCA.

Eligibility: The programme is open to students passing Higher Secondary (10+2) /+2 Vocational Examination or equivalents with Mathematics. Those who have not studied Mathematics as a distinct subject have to register for MTE-03 along with the first semester of BCA. Such students have to successfully complete MTE-03 within BCA programme.

Medium of Instruction: The programme is offered in English only.

Duration of the Course: Minimum:Three Years. Maximum: Six Years from the date of registration.

Lateral Entry Provision for BCA students: Students completing the BCA programme will be eligible for 3rd. semester entry into MCA programme.Thus a student if so desires may complete BCA and MCA in five years.

Credit Points: The programme comprises of 23 courses of 108 credits. The practical courses are of 2 credits each and project 4 credits.

PROGRAMME STRUCTURE AND MARK DISTRIBUTION:

Year/ Semt		Course Code	Course Title	Credit Points	Mark distribution			
					Mid-Sem/ assignment	Practical exam	Final /TEE	Total
1 YEAR	FIRST	CS-610	Foundation Course in English for Computing	4	20	---	80	100
		FHS-01	Foundation Course in Humanities and Social Sciences	8	20	---	80	100
		CS-611	Computer Fundamentals and PC software	4	20		80	100
		MTE-03 **	**Mathematical Methods-03**	**Non credit**	---	---	**100**	**100**
		CSL-611	Computer Fundamentals Lab	2		**100**		**100**
	SECOND	CS-612	PC Software Application Skills	4	20		80	100
		CS-60	Foundation Course in Mathematics in Computing	8	20	---	80	100
		CS-62	'C' programming & Data Structure	4	20		80	100
		CSL-612	MS Excel Lab	2		**100**		**100**
		CSL-62	'C' programming & Data Structure Lab	2		**100**		**100**
2 YEAR	3RD	FST	Foundation Course in Science and Technology	8	20	---	80	100
		CS-63	Introduction to System Software	4	20		80	100
		CS-05	Elements of System Analysis and Design	4	20	---	80	100
		CSL-63	Unix & Linux Lab	2		**100**		**100**
	4TH	CS-06	Introduction to DBMS	4	20	---	80	100
		CS-64	Introduction to Computer Organization	4	20	---	80	100
		CSL-65	Windows Programming Lab	2		**100**		**100**
		CS-66	Multimedia	2	20	---	80	100
		CSL-67	RDBMS LAB	4		**100**		**100**
3 YEAR	5TH	CS-68	Computer Networks	4	20	---	80	100
		CS-69	TCP/IP Programming	4	20	---	80	100
		CS-70	Introduction to Software Engineering	4	20	---	80	100
		CS-71	Computer Oriented Numerical Techniques	4	20	---	80	100
		CSL-68,69	Computer Network & TCP/IP Lab	2		**100**		**100**
	6TH	CS-72	C++ & Object Oriented Programming	4	20		80	100
		CS-73	Theory of Computer Science	4	20	---	80	100
		CS-74	Introduction to Internet Programming (Java, Active X)	2	20	---	80	100
		CS-75	Intranet Administration	2	20	---	80	100
		CSL-72	C++ & Java Lab	2		**100**		**100**
		CS-76	Project(Report + Viva) (75+25)	4	---	**100**		**100**
			Total	108	400	**900**	**1600**	**2900**

Course Fee: The Course Fee for BCA is Rs 30,000 (Rs. 5000 per semester + admission fees)

Project Fee: Rs. 300 (To be collected along with sixth semester Examination Fees).

** **Mathematical Methods (MTE-03) :** A candidate who has not studied Mathematics as a distinct subject at **10+2** level or its equivalent level need to register for MTE-03 along with first semester of BCA and successfully complete within the programe of BCA. No assignments/ internal exam need to be submitted for MTE-03. Also no counseling sessions are offered for MTE-03 by University. Students need to appear only in Term End Theory Examination for MTE-03. After completion of MTE-03, they would not get any certificate/grade card as it is not a programme. They will get only intimation of the examination result. They need to secure at least 40% marks in the Term End Theory Examination for MTE-03 to be declared as successful. It does not add to the credit of BCA.

DISTANCE MODE REGULATION FOR BCA

COURSE TITLE: After successful completion of the course the student will be awarded with the **'Bachelor in Computer Application Degree'** from Fakir Mohan University, Balasore.

COURSE VENUE: The DISTANCE EDUCATION STUDY CENTRES of the University designated by the Syndicate can only offer this course.

EVALUATION SYSTEM:

Each semester examination shall consist of two parts: mid-semester test and end-semester examination having the weightage of 20% and 80% respectively for theory papers. The course will consist of 2900 marks.

ATTENDANCE: A student has to attend a minimum of 75% of classes both in theory and practical separately to be permitted to sit for the end-semester examination. In case of medical ground, if certified by a Medical Officer not below M.B.B.S. doctor his/ her case may be considered with a minimum attendance of 60% and in no case below this. In case a candidate is unable to acquire the stipulated attendance at the end of any semester, he/ she will not be allowed to take the end-semester examination. The candidate shall have to take re-admission in the concerned semester and acquire minimum stipulated attendance to be eligible for taking the examination.

MID SEMESTER EXAMINATION:

The mid semester test with a weight age of 20% will be conducted by the teacher teaching the paper who will also evaluate the scripts and show it to the students.

EVALUATION OF ANSWER SCRIPTS:

Answer scripts of the end term examination will be valued by the examiners appointed by this university. For the End semester examination of theory papers, the questions in each paper shall be set in such a way that a student has to answer one question from each unit of the syllabus of the paper.

QUALIFYING LEVEL:

In order to pass a theory paper a candidate has to secure at least 40% of the marks at the end semester examination and 40% in aggregate of both end semester and mid semester examination of that paper. For passing a practical paper/project a candidate has to secure at least 50% of the marks in that paper.

CREDIT SYSTEM:

If a candidate passes all the six semester examinations, he/she will be declared to have passed the Bachelor of Computer Application (BCA) examination in:

(i) First class if he/she secures 60% or more in aggregate of all semester examinations taken together.

(ii) Second class if he/she secures 50% or more but less than 60% marks in aggregate of all semester examinations taken together.

(iii) General class if he or she secures 40% or more but less than 50% marks in aggregate of all semester examinations taken together.

BACK EXAMINATION:

If a candidate fails in any one paper (or papers) in any semester examination he/she has to appear the end semester examination for that paper (papers) only whenever the said semester examination is held. If a candidate passes in all the papers of a semester examination but fails in the aggregate then he may appear in one more of the papers of that semester examination in order to make up the aggregate whenever such examination is held.

MAXIMUM TENIUR:

The course has to be completed by a student in all respects in not more than 6 years from the date of his/her admission in to the course failing which the results of the examinations appeared by him/her shall stand cancelled.

LATERAL ENTRY PROVISION FOR BCA STUDENTS: Students completing the BCA programme will be eligible for 3rd semester entry into MCA programme. Thus a student if so desires may complete BCA and MCA in five years.

I-SEM BCA
CS-610: FOUNDATION COURSE IN ENGLISH FOR COMPUTING (FCEC)
F.M-80 Time-3hrs

Unit -1: Reading, Writing, Listening, Speaking Skills

Reading Comprehension; Study Guide; Passage for Reading; From George Orwell: Animal Farm; Note on the Author; Glossary, Comprehension Questions, Vocabulary, Words Having Related Meanings, Multiple Meanings, Word-Formation, Grammar and Usage, Concord of Number and Person, Tenses, Conversation, Pronunciation, Letters and Sounds, English Vowels, Word Stress.

Reading Comprehension: Passage for Reading, A page from the Book of Memory by Indira Gandhi, Glossary, Exercises in Comprehension, Vocabulary, Compound words Grammar and Usage, Articles, Past Perfect Tense, Conversation, Pronunciation, English Consonants, Vowel Contrasts.

Reading Comprehension, passage for Reading, A World of Four Sense by Ved Mehta, Glossary, Comprehension Questions, Vocabulary, Grammar and Usage, Prepositional Phrases, Participial Phrases, Phrasal Verbs, Relative Clauses, The Modal would, Adverbial Clauses, Writing, Listening Comprehension, Conversation, and Pronunciation.

Reading Comprehension, Passage for Reading, Science and Human Life by Bertrand Russell, Note on the Author, Glossary, Comprehension Questions, Vocabulary, Grammar and Usage, The Passive Voice, Non-finite Verbals, Gerund, Participles, Modal Auxiliaries, Writing, Conversation, Describing People, Expressing Agreement and Disagreement, Pronunciation, Distribution of /r/, /r/ /w/, Stress and Rhythm.

Unit- 2: Reading Comprehension, Passage for Reading, The Voice of India by Jawahar Lal Nehru, Note on the Author, Glossary, Comprehension Questions, Vocabulary Grammar and Usage, Writing, Conversations, Asking for directions, giving directions, Invitations, Accepting Invitations, Declining Invitations, Pronunciation, Tone

Groups, The nucleus, Tones

Composition & Study Skills: Development Of Paragraphs: The Topic Sentence, Illustration, Cause and Effect, Definition, Comparison and Contrast.

Writing A Composition: A Model Composition for Study, What you must do Before Writing Your Composition Decide on Your Topic, Writing your Topic, Gathering and Ordering Your Data, Construct Your Outline, Writing the First Draft, the Beginning, The Body, and The Ending.

Unit- 3: Note-Taking

How to Read, Specimen Notes, Reduction Devices, Passage for Note-taking, Headings and Subordinate Points, Two Types of Subordinates Points, Organization of Notes into Tables, A passage giving information in the form of figures, A passage giving a Contrastive Description, Organization of Notes into Diagrams, Flow-charts, Tree Diagrams.

Techniques of Summarizing: The Technique of Summarizing, Some More Techniques of Summarizing, Writing a Summary from a particular point of view.

Visual Aids: The Function of Visual Aids, Using Visual Aids, Tables, Charts and Graphs, Line Graphs, Bar Charts, Flow Charts.

Unit-4: Reading Comprehension, Study Guide, Passage for Reading, Glossary, Comprehension Questions, Rephrasing, Vocabulary, Grammar and Usage, Passive Voice, Listing, Writing

Reading Comprehension, Study Guide, Passage for Reading, Glossary, Comprehension Questions, Vocabulary, Grammar and Usage, Writing.

Reading Comprehension, Study Guide, Reading Passage, Glossary, Comprehension Questions, Vocabulary, Suffixes, Grammar and Usage, Present Simple Tense, Writing Defining.

Reading Comprehension, Study Guide, Reading Passage, Glossary, Comprehension Questions. Vocabulary, Compound Nouns, Grammar & Usage, Reduced Relative Clauses, Participle Modifiers, Writing, and Sequence Words.

Reading Comprehension, Study Guide, Passage for reading, Note on the author, Glossary, Comprehension Questions, Vocabulary, Grammar and Usage, Conjunction, Adjectival Clauses, Writing.

Unit-5: English For Computers : Reading Comprehensions, Study Guide, Comprehension Passage ,Reading comprehension, Study Guide, Comprehension Passage. Reading comprehension, Study

Guide, Comprehension Passage. Reading comprehension, Study Guide, Comprehension Passage. Reading comprehension, Study Guide, Comprehension Passage.
(Questions must covered from IGNOU materials)

I-SEM BCA
CS-611: COMPUTER FUNDAMENTAL AND PC SOFTWARE (CF&PCS)
F.M -80 Time-3hrs

Unit-1: What Is A Computer? The Computer And Integrated Circuit Technology, Classification Of Computers, Memory System, Characteristics Terms For Various Memory Devices, Main Memory Or Primary Storage, External/Auxiliary Memory, Magnetic Disk, Winchester Disk, Magnetic Tape, Optical Memories, High Speed Memories.
Input/Output Devices (Peripherals), Input Devices, Output Devices, Input/output Module Interface, External Interfaces, What Is Parallel Processing? Pipelining, Vector Processing, Introduction To Risc, Reasons For Increased Complexity, Principles of RISC.
Computer Software : System Software, Application Software, Machine Language, Assembly Language, High-Level Language, Fourth Generation Language, Elements Of A Programming Language, Variables, Constants, Data Type, Array And Expressions, Input And Output Statement, Conditional And Looping Statement, Subroutine And Functions.
What Is An Operating System? Evolution Of Operating Systems, Serial Processing, Batch Processing, Multiprogramming, Types Of Operating System, Batch Operating System, Multiprogramming Operating System, Network Operating System, Distributed Operating System.

Unit-2: Network Concept And Classification, Local Area Network (LAN), LAN Topology, LAN Access Method, Communication Architecture For Networks, LAN Hardware And Software, LAN Software/Operating System, Wide Area Network, Communication Switching Techniques, Wan Devices/Hardware, Types of Wide Area Networks, Few Applications, E-Mail (Electronic Mail), Edi, Networking Scenario, Internet, Bitnet (Because-Its Time Network), CompuServe, ISDN (Integrated Services Digital Network), NICNET, Open Indent Questions And Activities.
Definitions, Security Status On Pc, Breaches Of Security, Security Measures, Physical Security, Software Security, Network Security, Password Security, Cryptography: A Brief History, Cryptography, Cipher Systems, Data Encryption Standard (DES), RSA Approach To Encryption, Cryptanalysis.
Unit-3: The Evolution Of Virus, The Menace, The Process Of Infection, Classification Of Viruses, Boot Infectors, System Infectors, General .Com Or .Exe Infectors, Some Virus, Prevention, The Cure. **What Is Graphical User Interface?** Evolution Of The Human And Machine Interaction, Common Graphical User Interface Terms, Microsoft Windows (Ms-Windows), Structure Of A Window, Basic Techniques For Working In Windows, Using Menus, Working With A Dialogue Box, Types Of Options, Starting Windows 95, Task Bar, Start Menu, Shortcut Menus, Setup Screen Saver, How To Get Help, Shut-Down Windows 95.
Unit-4: My Computer, System Settings, Control Panel, Printers, Backup Your Data, Disk Drive Utilities, Disk Defragmenter, Check For Disk Errors, Increase Disk Space, Format Disks, Add/Remove Applications, Set-Up Windows For Multiple Users, Dos Prompt.
Windows Explorer, Working With Files, File Naming Conventions In Windows 95, Finding A File, Creating A File, Copy/Move Files, Associating Files & Programs, Delete Files, Find Information On A File, Working With Folders, Creating And Renaming Folders, Deleting Folders, Viewing Folders, Organizing Files With Folders, Controlling Access To A Folder, Recycle Bin.
Run Your Programs, Windows 95 Accessories, General Use, Writing & Drawing, Briefcase.
Network Setup & Configuration, Logging Onto The Network, Mapping Network Drives, Network Browsing, Sharing Folders & Printers, Connecting To Another Computer On Your Network, Dial-Up, Using Cables, E-Mail, and Internet.
Multimedia In Windows 95, Multimedia Add-Ons, Media Types, Audio, Visual, Multimedia Tools, CD Player, Media Player, Sound Recorder, Volume Control.
Unit-5: Starting Word, The Word Screen, Getting to Word Document, Typing and Revising Text, Typing Text, Editing text, Copying and Moving, Typing Special Characters (Symbols), some COMMON Features, Changing the Case of text, Moving & copying text with drag and drop, Justifying text, Creating Bulleted & Numbered lists, Arranging and Moving between open documents, Finding and Replacing, Finding and Replacing Text and Formatting, Editing and Proofing Tools, Using the Spelling Checker, Checking Grammar.
Formatting Text Characters, Formatting Paragraph, Centering, Right Alignment And Left Alignment, Indenting Text, Tab Stops, Line Spacing, Paragraph Spacing, Borders And Shading,, Document Templates, Template Wizards, Starting A New Document From A Template.
Mail Merge, Data Sources & Main Documents, Starting & Editing the Main Document, Merge Printing Labels & Envelopes, MACROS, What are Macros?, Recording a Macro, Editing & organizing A Macro, Assigning Macros To A Menu, Toolbar And Shortcut Keys, Protecting Documents, Printing a Document.
What Is Business Graphics? Types Of Business Graphics, How To Make An Effective Presentation? Physical Aspects Of Presentation, A Presentation Graphics Package: PowerPoint, Creating A Presentation, Creating A Title Slide, Creating A Graph, Creating Tables, Make Organization Chart, Save And Close A Presentation, Working With Tools, Slide Show.

(Questions must covered from materials)

I-SEM BCA

FHS: CS-01 (FHSS)

F.M-80 Time-3hrs

UNIT 1: HUMAN BEINGS AND SOCIAL DEVELOPMENT: AN APPROACH

Scientific Approach to the Study of Human Beings : Human Being at the Centre of Social Processes, Social Science as Reflective Critique, Human Being as a Creative Agent, Science as Empathic and Critical Reflection , Social Science Procedure, Understanding Human Beings in their Social Setting, Science as Critique of Human Conditions ,Racial Differentiation and the Unity of Human Beings, Social Roots and Forms of Prejudice, Prejudice in Science, Region Prejudice Knowledge and Society, Information Society, Universalities and Specificities of Culture.

Evolution of Humankind : Tool Making/Using-An Evolutionary Perspective, the Old Stone Age, the New Stone Age, The Bronze Age, The iron Age, Tool Making /Using and March of Culture, Social institutions and interactions, Specialization and Division of Labour, Urban Revolution, Rise of Great Religions, Nature and Human Beings: Adaptation and interaction, Patterns of Adaptation, Tribes and their Patterns of Adaptation, Interaction: Dependence, Conquest and Harmony, Evolution of Human Being as a Thinking Animal, Unique Capabilities of Thinking Human Beings, Species-specific Characteristics, Evolution of the Knowing individual, Growth of Two Cultures, Forms of Knowledge in Transition, Division of Knowledge into , Disciplines.

Social Change and Evolution: Concepts of Change: Evolution, Development and Growth, Social Change, Development, Development and the New World Order , Differentiation in Social Forms, Simple to Complex Society, Regional Cultures: ,Technological Advance and Social Differentiation , Emergence of Class Divisions ,Process of Human Settlement.

UNIT-2: STAGES OF AN EVOLUTION

Domestication of Animals and Origins of Agriculture: Man as Hunter/Gatherer, Archaeological Evidence for Domestication, the First Farmers of Western Asia, The Development of Farming and Herding in India, The Consequences of Agriculture and Herding, Social Structure of Hunting and Farming Societies, Development of Social Complexity.

The River-Valley Civilizations: Factors for the Growth of Early Civilizations, Three Distinct River-Valley Landscapes, City Dwellers of Lower Mesopotamia, The Sumerian Civilization, Sources of Kings Power, Chart-l The Chronology of Mesopotamia, Egypt, The Egyptian Culture, Administration, Chart 2 The Chronology of Egypt, The Harappan Cities' Civilization, Chart-3 The Chronology of the North Western Subcontinent.

UNIT-3: Feudal Societies: Slavery: Slavery in the Indian Context, Slavery, Serfdom and the Peasant Societies, Transition to Feudalism, Henry Pirenne's views on Feudalism, Thesis of Marc Bloch, Perry Anderson on Feudalism, Growth of Feudal System, Form or Labour under Feudalism, Feudal Production System, The Class of Lords, The Dynamism of Feudal Economy, Growth of Population, Trade and Urbanization, Growth of New Economy, Decline of Feudalism, Shortage of Labour, Peasant Rebellions, Feudalism in the Indian Context.

Renaissance and Reformation: Social and Economic Background, Renaissance, Humanism, Secularism, Renaissance Literature, Art and Architecture, Philosophy, Beginning of the Scientific Revolution, Political Theory, Reformation, Doctrinal Debates in the Church, The Protestant Revolution, Economic and Political Changer, Rise of Nation States Geographical Discoveries Colonization.

Industrial Revolution, Merchant Capitalism, Emergence of wage Labour, Putting-Out system, The Enclosure Movement, Market and Commodity Production in Agriculture, Agricultural Revolution, Capitalist Relations in Agriculture, Factory and Machine, The New Technology, Factory system, Labour and Legislation, Capital Accumulation and Profit Motive, Changes in the Composition of Capital ,Cyclical Pattern of Growth, Expansion of Capitalism, Rise in Individualism, Division of the World and the Colonies.

UNIT-4: EMERGENCE OF INDEPENDENT INDIA

Characteristics of Indian Economy: Pre-Colonial and Colonial: Characteristics of Pre-colonial Economy, Agriculture, Trade, Handicraft Industries, Aspects of Colonial Rule Evolution of Colonial Rule, and Impact of the Colonial Rule: Western View-point, Impact of the Colonial Rule: Indian View-point, The Drain theory, De- industrialization, Phases of the Colonial Rule, Agriculture under the Colonial Rule, The New Land Settlement, Commercialization of Agriculture, Impact on Agriculture, Role of the Colonial State.

Indian National Movement-1: 1857: The First War of Independence, Causes, Extent and intensity, Defeat, Early Phase of Nationalism ,Role of the Intellectuals , Role of Colonial state , Emergence of the Indian National Congress, Moderate and Militant Nationalists, Moderates Aims and Methods, Militants Aims and Methods, Swadeshi Movement, Socio-Religious Reform and Cultural Renaissance, Prominent Reformers: Issues and Views, Their Approach, Their Methods.

UNIT-5: Indian National Movement-2: The Emergence of Gandhi, Official Response, Non-Cooperation and Khilafat, Aftermath, Civil Disobedience Movement, The Revolutionary Movement, The Socio-Economic Content of Swaraj, Emergence of Communist and Socialist Groups, Role of Nehru, Impact on Congress, Peasants, Working Class and State People's Movements, Peasant Movements, Working Class Struggles, Movement in Princely States, Other Movements, Towards Freedom, Congress Ministries , Second World War and India, Quit India Movement , Independence.

Values of the Indian National Movement: Secularism, What is Secularism?, Practice of Secularism, Gandhi and Nehru, Socialism and Planned ,Economic Development, Democracy and Civil Liberties, Nature of the Colonial state, Nationalist struggle for Democratic Rights, Humanism, Sources of Humanism, Struggle for Humanism, The British Role, Universal Brotherhood and Peace, Some Early Instances, Struggle Against Fascism.

I-SEM BCA
MTE-03-(Ancillary Paper-FOR Non Math Students)
F.M -100 Time-3hrs

UNIT-1: ALGEBRA AND GEOMETRY

Sets and Functions

Graphs and functions

Elementary Algebra

Coordinate Geometry

Vectors

UNIT-2: CALCULUS

Differential Calculus

Applications of Differential Calculus

The Integral

Integration of Elementary Functions

Differential Equations

UNIT-3: PROBABILITY DISTRIBUTIONS

Statistics

Probability

UNIT-4: DISCRETE DISTRIBUTIONS

Discrete Probability Distributions

Continuous Probability Distributions

UNIT-5: STATISTICAL INFERENCE

Statistical Data Sampling, Hypothesis Tests.

Correlation and Regression.

I-Sem BCA

CSL-611 (COMPUTER FUNDAMENTAL LAB)

F.M -100 Time-3hrs

I. DOS commands (Limited)

II. MS-Office packages

i. MS-POWER POINT

ii. MS-WORD

III. Device information.

II- SEM BCA

CS-612: PC SOFTWARE APPLICATION SKILLS (PCS&AS)

F.M-80 Time-3Hrs

UNIT-1: Classical Problems and Puzzles:

Crossing the Konigsberg Bridges, Cannibals and Missionaries, Decanting Problems, Decision Trees, Classical Conundrums.

The Higher Arithmetic-2: Prime Numbers, Gaps between Primes, the Sieve of Eratosthenes, Euler's Proof of the Infinitude of the Primes.

The Higher Arithmetic -11: Hungarian Problems, an Archimedean Result, the Theorem of Pythagoras and Irrational Numbers, the Division of a Plane by Straight Lines, Minimum Spanning Circles.

Central Methods: Five Sailors, a Monkey and Many Coconuts, The Twelve Coins problem, Poincare on the Psychology of Invention.

UNIT-II: Introduction To EXCEL: Excel Basics, To Start Excel, Workplace of Excel Spreadsheet, Worksheets within Workbook, Getting started with EXCEL, Create a Workbook, Open a Workbook, Find a Workbook, Insert a Worksheet, Delete a Worksheet, Move the Worksheet, Selecting Cells, Enter and Edit Data, To Create a Custom List, Cell References, Range Names, Navigate Worksheet, Search and Replace Data, Rearrange Cell Contents, Move or Copy Cell Contents - Inserting or Deleting Rows and Columns, Save and Protect Workbook, Exit EXCEL.

Formatting And Printing Worksheet: Page Set-up, Column Width and Row Height, Using Menu Commands, Using Mouse, Fonts, Alignment, Numbers, Auto format, Format Painter, Getting Worksheet Printed.

Customizing Workplace

EXCEL Windows, Arranging Windows, Moving between Windows, Hiding/Unhidden Windows, Splitting and Freezing Window Panes, Workplace Displays, Worksheet at different Magnifications, Using Custom Controls, Forms Toolbar, Create Controls on the Worksheet, Format Controls, Worksheet Controls, Using Dialog Boxes, Create Dialog Boxes, Test Dialog Boxes.

Calculations in Worksheet

Formula Basics, Basic Properties of Formulas, Operators in the Order of Precedence, How to Enter a Formula, Editing Formula, Functions, Categories of Functions, Function Wizard.

UNIT-III: Charts : Chart Components, Chart Types, Chart Wizard, Resizing and Moving Charts, Editing Charts, Adding or Deleting Data, Change the Chart Type, Format a Chart, Drawing in the Chart, Use Charts for Analysis, Create a Trend line, Format the Trend line, Delete the Trend line, Printing Charts.

Database Power of Excel

Database Concepts, Adding Records, Deleting Records, Editing Records, Sorting a Database, Filtering a Database, Using AutoFilters, Using Advanced Filters, Data Tables, Pivot Table, Creating Pivot Table, Changing the layout, Adding or Removing fields, Adding Pivot Table Data, Removing Pivot Table Data, Updating data in Pivot Table, Deleting Pivot Table.

Focus On Analysis: Goal Seek, Solver, Scenario Manager, Creating a Scenario, Displaying the Scenario, Editing the Scenario, Deleting a Scenario.

Automating Worksheet : Using Macros, What are Macros, Start Recording a Macro, Run the Macro, Delete a Macro Assigning the Macro to Toolbar, Menu or Shortcut Key, Using Templates, Creating a Template, Opening a Template, Modifying Original Templates.

UNIT-IV: Internet: An Overview: What is Internet? How does Internet Work? Domain Name System (DNS), who governs the Internet? What I can do on Internet? How Can I Connect to Internet? Host/Terminal Connections, Individual Computer TCP/IP Link, Dial-up or On-Demand TCP/IP Link through LAN, Dedicated Link Connections, Tools and Services on Internet , Electronic Mail on Internet, Usenet and Newsgroups, Transferring Files with Ftp, Connecting to Remote Machines with Telnet, Some Other Tools, Browsing the Internet, What is Gopher? What is World Wide Web?

UNIT-V: Internet Tools: E-mail, FTP And Telnet

Electronic Mail: A Message window, E-mail Addressing, The Components of E-mail, Message Composition, Checking and Reading Messages, Mail Menu items, Address Book, Troubleshooting in E-mail, Interesting E-mail Addresses, Mail Reflectors, Mailing Lists and List Servers, FTP and Telnet, FTP: The File Transfer Program, How to Use FTP, Using FTP via VSNL, Telnet, Interesting Sites.

Browsers: Netscape Navigator, Search Engines, NCSA Mosaic, Microsoft Internet Explorer.

Visiting Web Sites: Downloading, Examples, Netscape Navigator, Microsoft Internet Explorer, List of URL's of Interesting Sites.

II-SEM BCA

CS-60: FOUNDATION COURSE IN MATHEMATICS IN COMPUTING (FCMC)

F.M-80 Time-3hrs

UNIT-1: Elements of Differential Calculus:

Real Numbers and Functions, Limits and Continuity, Differentiation

Derivatives of Trigonometric, Derivatives of Some Standard Functions.

UNIT-2: Drawing Curves

Higher Order Derivatives, the Ups And Downs, Geometrical Properties of Curves

Curve Tracing

UNIT-3: Integral Calculus

Definite Integral, Methods of Integration, Reduction Formulas

Integration of Rational and Irrational Functions

UNIT-4: Application of Calculus

Applications of Differential Calculus, Area under a Curve

Further Application of Integral Calculus

UNIT-5: Solutions of Polynomial Equations

Sets, Complex Numbers, System of Linear Equations, Cramer's Rule,

Inequalities, Preliminaries in Plane Geometry, The Standard Conics,

Preliminaries in Three-Dimensional, the Sphere

II-SEM BCA

CS-62: 'C' programming & Data Structure (C &DS)
F.M-80 Time-3hrs

UNIT-I

Introductory : An Overview, A C Program, Escape Sequences, Getting a "feel" for C.

Data Types In 'C' : Variables of type int, Variables of type char, Variables of type float, Variables of type double, Enumerated types, The typedef Statement, Identifiers.

Operators and Expressions in C:

Elementary Arithmetic Operations and Operators, Expressions, Ivalues and rvalues, Promotion and Demotion of Variable Types: The Cast Operator, Format Control in the printf ( ) and scanf ( ) Functions.

Decision Structures in 'C': Boolean Operators and Expressions, The goto Statement, The if ( ) Statement, The if ( ) else Statement.

Control Structures – I: The while () and do - while () Loops, The Comma Operator, The Transfer of Control from Within Loops, The if - then - else or Ternary Operator, The switch - case - default Statement.

UNIT-II

Control Structures – II: The for (;;) Loop, Uni-dimensional Arrays, The Initialization of Arrays and the size of Operator, Storage Classes and Scope.

Pointers and Arrays: Pointer Variables and Pointer Arithmetic, Pointers, Arrays and the Subscript Operator, A Digression on scanf (), Multidimensional Arrays.

Functions: Function Prototypes and Declarations, Functions and Scope, Pointers as Function Arguments, Unidimensional Arrays as Function Arguments String Functions, Multi-Dimensional Arrays as Function Arguments.

Functions –II : Recursive Functions, Macros, Conditional Compilation, Macros with Parameters, Command-line Arguments, Variable-length Argument Lists, Complicated Declarations, Dynamic Memory Allocation.

Files and Structs, Unions and Bitmfields

Files and File I/O, fprintf (), fscanf (), stdin, stdout and stderr, sprintf () and sscanf (), fgets (), fputs (), getc () and putc (), fread (), fwrite (), rewind () and feof (), Structs, The Dot Operator, Structs and Files: fseek, fseek ( ), Structs and Functions: the Arrow Operator, Unions, Bit Fields: the Bitwise Operators.

UNIT-III

Introduction to Data Structures; Array

Program Analysis, One Dimensional Arrays, Array Declaration, Storage of Array in Main Memory, Sparse Arrays.

Lists : Basic Terminology, Static Implementation of Lists, Pointer Implementation of Lists, Insertion in a List, Deletion from a List, Storage of Sparse Arrays using Linked List, Doubly Linked Lists, Circular Linked List, Storage Allocation, Storage Pools, Garbage Collection, Fragmentation, Relocation and Compaction.

Stacks And Queues: Defining Stack and Queue, Stack Operations and Implementation, Array Implementation, Pointer Implementation, Stack Applications, Convert Number Bases by Using Stacks, Infix to Postfix Conversion, Queues: Operations and Implementation, Queue Application, Priority Queues.

Graph: Defining Graph, Basic Terminology, Graph Representation, Graph Traversal, Depth First Search (DFS), Breadth First Search (BFS), Shortest Path Problem, Minimal Spanning Tree.

UNIT-IV

Trees : Basic Terminology, Binary Trees, Inorder Traversal, Post order Traversal,Preorder Traversal, Binary Search Trees, Operations on a BST, Insertion in Binary Search Tree, Deletion of a node in BST, Search for a key in BST.

AVL-Tree and B-Tree:

Height Balanced Tree, Building Height Balanced Tree, B-Tree, B-Tree insertion, B-Tree deletion, B-Tree of order-5 (An example).

File: Terminology, File Organisation, Sequencial Files, Direct File Organization, And Indexed Sequential File Organisation.

UNIT-V

Searching Techniques:

Sequential Search, Binary Search.

Sorting Techniques – I : Internal Sort, Insertion Sort, Bubble Sort, Quick Sort, 2-way Merge Sort, Heap Sort, Sorting on Several Keys.

Sorting Technique – II: Data Storage, Sorting with Disk, Buffering, Sorting with Tapes.

II-SEM BCA
CSL-612 (MS-EXCEL LAB)
F.M -100 Time-3hrs

1. Getting started with EXCEL, Create a Workbook, Open a Workbook, Find a Workbook, Insert a Worksheet, Delete a Worksheet, Move the Worksheet, Selecting Cells, Enter and Edit Data, To Create a Custom List, Cell References, Range Names, Navigate Worksheet, Search and Replace Data, Rearrange Cell Contents, Move or Copy Cell Contents - Inserting or Deleting Rows and Columns, Save and Protect Workbook, Exit EXCEL.
2. **Formatting And Printing Worksheet**
3. **Customizing Workplace.**
4. **Calculations in Worksheet.**
5. Use of Chart
6. Use of Database in Excel
7. Internet use etc.

II-SEM BCA
CSL-62 (C Programming and Data Structure lab)
F.M-100 Time-3hrs

1. General programs
2. Array programs
3. Function programs
4. Decision structure programe
5. Control structure programe
6. Pointer, Structure, Union programs.
7. File programs
8. linked list, stack, queues programs
9. graph & tree program
10. Searching and sorting programs.

III- SEM BCA

FST-CS-61: **FOUNDATION COURSE IN SCIENCE & TECHNOLOGY (FCST)**

F.M-80 Time-3hrs

UNIT -I: -HISTORY OF SCIENCE

SCIENCE AS A HUMAN ENDEAVOUR- Linking past with Present, some aspect of science.

Science in the ancient world- Primitive Human Society, Agriculture and Civilization.

IRON AGE- Science in Iron Age India, Science in Iron Age Greece, Atomic Theory in Antiquity, and Decline of European Science.

THE GOLDEN AGE OF SCIENCE IN INDIA- Second Urban Civilization in India, The Gupta Period, Age of Conflict.

UNIT-II: EMERGENCE OF MODERN SCIENCE

Science in the Medieval Times-The Arab Renaissance, Science and Technology in Medieval India. Impediments to the growth of Science in India

RENAISSANCE, THE INDUSTRIAL REVOLUTION AND AFTER- Science and Technology in Medieval Europe, The renaissance (1440-1540), Science in the Post Renaissance Period (1540-1760), The Industrial Revolution (1760-1830) and after.

SCIENCE IN COLONIAL AND MODERN INDIA-Science in Colonial India, Science in Post-Independence India, What we have Learnt.

THE METHOD OF SCIENCE AND THE NATURE OF SCIENTFIC KNOWLEDGE- Science- its Many Facets, The Method of Science, The nature of Scientific Knowledge, Scientific approach to Problem Solving, A Reflection about Science.

UNIT-III:

UNIVERSE AS A SYSTEM Historical Perspective, the Physical Universe.

EXPLORING THE UNIVERSE Probing the Universe, Understanding the Universe.

THE SOLAR SYSTEM : The Solar System: A General Survey, the Sun, a Model Star, the Planet, Asteroids and Comets. The Earth-The Most familiar Planet, Some Myths and Misconceptions.

ORIGIN AND EVOLUTION OF LIFE Origin of Life on the Earth, Biological Evolution, Systems View of Life, Extra-terrestrial Life.

EVOLUTION OF MAN Theories of Evolution Evidences of Evolution.

UNIT-IV: ENVIRONMENT AND RESOUCES

ECOSYSTEM Ecology and Environment, Ecosystem, Cycling of Materials in the Ecosystem, Interaction in the Earth Ecosystem.

COMPONENTS OF ENVIRONMENT The Oceans, the Atmosphere, the Forests,

THE CHANGING ENVIRONMENT Pollution, Impact of technology on Environment, Impact of Population increase on Environment.

NATURAL RESOUCES Natural resources, Energy: A non-Conventional Renewable e Resources. Exploration of Resources.

RESOURCE UTILISATION, PLANNING AND MANAGEMENT. Use of Natural Resources, Recycling of Used Resources and Waste, Resource Planning and Management, conservation of mineral Resources.

UNIT-V: AGRICULTURE, NUTRITION AND HEALTH

FOOD AND AGRICULTURE : Agriculture in India-A way of Life, Basic Resources for Agriculture, The plant and Animal Wealth of India, Scientific and Technological Advancements in Our Agricultural Produce, Agro-techniques , Livestock, poultry, Fisheries.

SCIENTFIC POSSIBILITIES AND SOCIAL REALITIES. Agriculture in Special Areas, Reclamation of saline, Alkaline Soils, problems Associated with Modern Agriculture, Mismatch between Man's Scientific ability to Produce and Social incapacity to Utilize. Biotechnology in Agriculture.

FOOD AND NUTRITION Importance of Nutrition, Nutrient Groups and their Functions, Essential Nutrients, Food as Fuel for the Body Machine, Balanced Diet, Food Fads, Food Allergies, Adulteration of Food, malnutrition and III Health.

HEALTH AND DISEASE. What is Good Health? Disease, Infectious Diseases, Spread of Diseases or Transmission, Prevention of Diseases, Health Care in India, AIDS.

III-Sem BCA

CS -63 :INTRODUCTION TO SYSTEM SOFTWARE (ISS)

F.M-80 Time-3hrs

UNIT-I: INTRODUCTION TO PROGRAMMING LANGUAGE CONCEPTS

What is an Algorithm? Flowcharting. Problem and its Algorithm. Concepts of a Programming Language. Categories of Language. Elements of Programming Language.

INTRODUCTION TO ASSEMBLER: Advantages of a Translator. Types of Translators. Assembler Implementation. Macro and Macro Processor. Loaders.

INTRODUCTION TO COMPILER WRITING: What is a Compiler? Approaches to Compiler Development. Compiler Designing Phases. Software Tools.

UNIT-II: GRAPHICAL USER INTERFACE: What is Graphical User Interface? Evolution of Human and Machine Interaction. Common Graphical User Interface Terms. Functionality of Graphical User Interface. A look at Some Graphical User Interface.

INTRODUCTION TO A TEXT EDITORS & DEBUGGING SYSTEM

Introduction to Text Editor. Interactive Debugging Systems.

UNIT-III: INTRODUCTION TO OPERATING SYSTEM : What is an Operating System? Evolution of Operating Systems. Types of Operating Systems. Operating System Structure. Future Operating System Trends.

PROCESS MANAGEMENT

Process Concept. Processor Scheduling. Interprocess Communication and Synchronization. Deadlocks.

MEMORY MANAGEMENT

Single Process Monitor. Multiprogramming with Fixed Partitions. Multiprogramming with Dynamic Partitions. Paging. Segmentation. Virtual Memory.

FILE MANAGEMENT

File Concept. Directories. Disk Organization. Disk Space Management Methods. Disk Allocation Methods. Disk Scheduling. File Protection.

UNIT-IV:

THEORITICAL CONCEPTS OF UNIX OPERATING SYSTEM: Basic Features of UNIX Operating System. File Structure. CPU Scheduling. Memory Management. File System.

UNIX - GETTING STARTED – I: Getting Started. Files and Directories.

UNIX - GETTING STARTED – III: Looking at File Contents. Your Own Directories. File Permissions. Basic Operations On Files. Changing Permission Modes. Standard Files. Processes.

TEXT MANIPULATION: Inspecting Files. Operating On Files.

EDITORS: General Characteristics of VI. The Line Editors Ex and Ed. The Stream Editor SED. Changing Several Files In SED. AWK.

UNIT-V:

USER TO USER COMMUNICATION: On-Line Communication. Off-Line Communication.

SHELL PROGRAMMING: Programming in The Bourne and the C-Shell. Wild Cards. Simple Shell Programs. Variables. Programming Constructs. Interactive Shell Scripts. Advanced Features.

PROGRAMMING TOOLS: The UNIX C Compiler. Some Other Tools. Maintaining Programs. The Source Code Control System

SYSTEM ADMINISTRATION - A Definition. Booting the System. Maintaining User Accounts. File Systems and Special Files. Backups and Restoration.

III-SEM BCA

CS -05: Introduction to System Analysis and Design (ISAD)

F.M -80 Time-3hrs

UNIT-1: An Overview: What is a system? Systems study, Systems analysis and Systems approach, Characteristics of a system, Elements of systems analysis .Types of systems.

System Development Life Cycle: Preliminary investigation, Determination of system requirements, Design of system, Development of software, Systems testing, Implementation, Evaluation and Maintenance

Software Crisis: From Programmers point of view, From Users point of view

Role of a Systems Analyst: Who is Systems Analyst? What a Systems Analyst does? Attributes of an effective Systems Analyst Why **System Projects?** Sources of Project Requests ,Requests from Department Managers ,Requests from Senior Executives ,Requests from System Analysts , Requests from Outside Groups, Managing Project Review and Selection, Steering Committee ,Information Systems Committee, User Group Committee , The Project Request , Preliminary Investigation Conducting the investigation , Testing Project Feasibility , Handling Infeasible Project, , Problem Classifications and Definitions, , Defining a Problem, Evaluating the Problem, Sources of Problem/Opportunity, Problem Identification and Definition .

UNIT-2 :FEASIBILITY STUDY: Preliminary Study , Different Types of Feasibility, Technical feasibility, Operational feasibility, Economic feasibility, Social feasibility, Management feasibility, Legal feasibility, Time feasibility, Investigative Study, Steps in feasibility analysis, Analyzing systems data, Identifying design requirements ,Cost/Benefit Analysis, Tangible or intangible costs and benefits, Direct or indirect costs and benefits, Fixed or variable costs and benefits, How to define cost-benefit analysis? Fact Findings, Interviewing, Questionnaires, Observing the current system, Determination of DFD, New System.

SYSTEM REQUIREMENT SPECIFICATIONS AND ANALYSIS

Data Flow Diagrams, (DFD), What is DFD?, Charting tools used for DFDs,Data Dictionaries, Why Data Dictionary?, Major symbols, Four rules ,Data Dictionary types, The makeup of Data Dictionaries , HIPO, Constructing a VTOC, Constructing an IPO ,Decision Tables and Decision Trees, Decision tables , Decision trees, Warnier-Orr diagrams ,Nassi-Shneidermann charts

UNIT -3 :STRUCTURED SYSTEM DESIGN : System Design Considerations, Design Objectives , Constraints , Processing Techniques, Operation , Design Methodologies, Structured Design, Major System Design Activities, System Interface Specification, Audit Considerations, Audit Control and Documentation Control, Modularization, Design Process, System Specifications, Prototype Design.

INPUT DESIGN AND CONTROL : Processing Transaction Data, Batch Processing , On-line Processing, Elements of Input Data, Input Data , Source Documents, Input Media and Devices, Input Design Guidelines , Controlling Amount of Data, Avoiding Delay , Avoiding Errors in Data, Avoiding Extra Steps , Keeping the Process Simple , Major Concerns regarding input, Input Verification and Control, Key Verification, Use of Self-Checking Numbers , Visually displaying an identifying Characteristics, Hash Totals, Checking Between a Range of Numbers ,Reasonableness Test, Verification of Code, Verification of Data Type , Verification that certain Combinations of Data Exist, Sequence Check, Data Dictionaries, How to Layout Terminal Screen, Designing of CRT-Input Display Screen , Basic Rules for CRT-Input Display Screen, Major Concerns regarding CRT-Input Screen Design, Ease of Use, Improved Processing Speed, Menu Driven Screens , Emphasizing Information on Display Screens ,Colour Use in Screen Design , Colour Selection, Editing through Display Screens

OUTPUT SYSTEM DESIGN : Types of Output , Application Output, Operating Output, Output Devices, Output Design Consideration, Design of Output Reports, Designing Screen Output, Menu Design, Form Design and Control, Form Design , What is Form?, Classification of Forms , Factors to be Considered in Form Design, Forms Control, Computer Graphics, Presentation Graphics , Decision Support Graphics , Graphics Hardware/Software,

FILE AND DATABASE DESIGN : Selecting Data Storage Media , File Concepts4.3 Types of File , Master, Transaction, Table , Report , Backup, Archival , Dump, Library, File Organization,: Sequential, Random or Direct , Indexed, File Design, Database Design, Logical and Physical view of Data, Schema , Sub-Schema, Types of Database, Hierarchical Model , Network Model , Relational Model, , Coding System, , Types of Code , Classification Code , , Function Code , Card Code, , Sequence Code , , Significant - digit Subset Code , , Mnemonic Code, , Acronyms.

UNIT-4: SYSTEM DEVELOPMENT: Tasks of System Development, Prototype Installation, Hardware and Software Selection and Performance, Hardware Selection, Software Selection, Benchmark Testing, Preparing Software Development Cycle, Identifying Programs , Program Logic and Flowcharts, Control Structure, Pseudo code, Software Specification Language Selection Criteria , Volume of Data, Complexity of Processing , Compatibility with other Systems, Types of Input/Output , Development Efforts.

SYSTEM CONTROL AND QUALITY ASSURANCE : Quality Assurance in Software Life Cycle :Quality Factors Specifications ,Software Requirement , Specifications , Software Design Specifications ,Software Testing and Implementation , Maintenance and Support, Levels of Quality Assurance, Testing , Verification with Validation , Certification, Design Objectives: Reliability and Maintenance, Designing Reliable Systems , Designing Maintainable Systems, Maintenance Issues, Maintainable Designs, Testing Practice and Plans, Levels of Tests, Unit Testing , System Testing , Special Systems Tests, Designing Test Data, System Control , Objective of System Control , Types of Control, Audit Trail:

DOCUMENTATION : Characteristics of a Good Documentation, Types of Documentation , Program Documentation, Operations Documentation , User Documentation , Management Documentation , Systems Documentation, Software

Design and Documentation Tools , Structured Flowchart, HIPO Diagram , Warnier/Orr Diagram, Need for Documentation, Guide lines/Format for Preparing Documentation Package, Elements that comprise a Documentation Package

SYSTEM IMPLEMENTATION : Training of Personnel involved with System , System Operators Training, , User Training, Training Methods , Vendor and In-service Training, In-house Training, ,Conversion Methods, Parallel Systems , Direct Conversion , Pilot System, Phase-in Method, Conversion and Operation Plans , Site Preparation , File and Data Conversion, Post-implementation Review, Review Plan, System Maintenance, Drawing up Computer Contract, Respective Responsibilities of Vendors and Buyers , Documentation, Hardware , Delivery and Acceptance, Right of Use of Equipment from Other Vendors , Warranties , Guarantees, Payments , Bankruptcy, Hardware Acquisitions, Tender Evaluations, Costing Factor , Equipment Characteristics , Potential for Growth, Vendor Support, Criteria for Vendor's Selection , Economic Factors, Hardware Factors , Software Factors , Service Factors, Reputation of Manufacturer, Acquisition for Proprietary Software Packages , Technical Aspect of Proprietary Software , Approaches to Software Evaluation, Service Bureaux, Advantages of Using Data Centers , Disadvantages of Using Data Centres, Financing use of Computers , Renting, Leasing , Outright Purchase

UNIT-5: INTRODUCTION TO MIS : What is Management Information System (MIS)?, Historic Development, Computer Systems and MIS, Organizational Systems and MIS,Logical Foundation of MIS, Typical Systems, The Future.

THE TECHNOLOGY COMPONENT : Overview of Computing Technology, Overview of Communication Technology, Database Technology , Data Modeling Relational Model ,Structured Query Language (SQL), Fourth Generation Language (4GL), Complex Database, Decision Support Systems, Knowledge Based Systems

THE ORGANISATIONAL IMPACT OF MIS: Information as a Resource, Information for Competitive Advantage, Organization, Information and Decision, Data and Information, Information and Management, Information Support and Nature of Management, MIS as a Profession.

III-SEM BCA

CSL-63 LAB **F.M-100 Time-3hrs**

UNIX/LINUX LAB

1. Getting Started. Files and Directories.
2. Looking at File Contents.
3. Your Own Directories. File Permissions.
4. Basic Operations on Files. Changing Permission Modes. Standard Files. Processes
5. Shell programming

IV-SEM BCA

CS-06: Introduction to DBMS (IDBMS)

F.M -80 Time-3hrs

UNIT 1: BASIC CONCEPTS : Traditional File Oriented Approach, Motivation for Database Approach, Database Basics Three views of data, The Three level Architecture of Data Base Management System, Database Management System Facilities, Elements of a Database Management System, Advantages and Disadvantages of Database Management System

DATABASE MODELS AND ITS IMPLEMENTATION : File Management System, Entity Relationship Model, Relationship between Entity Sets Representation of Entity Sets in the Form of Relations, Generalization and Specification Aggregation, the Hierarchical Model, Replication Vs Virtual Record, The Accessing of Data Records in hierarchical Data Structure, Implementation of the Hierarchical Data Model, The Network Model, DBTG Set, Implementation of the Network Data Model, The Relational Model, Advantages and Disadvantages of Relational Approach, Difference Between Relational and Other Models, An example of a Relational Model , Conversion of Hierarchical and Network Structure into Relation, Implementation of Relational Data Model.

UNIT-2: FILES ORGANISATION FOR CONVENTIONAL DBMS : File Organization, Sequential File Organization, Indexed Sequential File, Types of Indexes, Organization Structure of Indexed Sequential file, Virtual Storage Access Method (VSAM), Implementation of Indexing using tree Structure, Direct File Organization, Multi-key File Organization, The need for Multiple Access Path, Multilist file Organization, Inverted File Organization, Cellular Partitions, Comparison and Trade-off in the Design of multikey file

MANAGEMENT CONSIDERATIONS: Organizational Resistance to DBMS Tools, Conversion from an Old System to a New System, Evaluation of a DBMS, Administration of a DBMS

UNIT-3: RELATIONAL MODEL : Concepts of a Relational Model, Formal definition of a Relation, The CODD Commandments, Relational Algebra, Relational Completeness

NORMALIZATION : Functional Dependency, Anomalies in a Database, Properties of Normalized Relations, First Normalization, Second Normal Form Relation, Third Normal Form, Boyce-CODD Normal Form (BCNF), Fourth and Fifth Normal Form , Some Examples of Database Design

STRUCTURED QUERY LANGUAGE: Categories of SQL Commands, Data Definition, Data Manipulation Statements, SELECT- the Basic Form, Sub queries, Functions, GROUP BY Feature, Updating the Database, Data Definition Facilities, Views

UNIT-4: DISTRIBUTED DATABASES: Structure of Distributed Database, Trade offs in Distributing the Database, Advantages of Data Distribution Disadvantages of Data Distribution, Design of Distributed Databases, Data Replication, Data Fragmentation.

OBJECT ORIENTED DATABASE MANAGEMENT SYSTEM RELATIONAL MODEL:

What is Next Generation Data Base System? New Database Application, What is Object Oriented Database Management System? Promises of Object Oriented System, Promises and Advantages of Object Oriented Database Management System, Deficiencies of Relational Database Management System, Difference between Relational Database Management System and Object Oriented Database Management System, Alternative Objective Oriented Database Strategies.

UNIT 5: INTRODUCTION TO CLIENT/SERVER DATABASE: Evolution of Client/ Server, Emergence of Client/ Server Architecture, the Client/ Server Computing, Basics of Client/Server Computing Paradigm, Why need Client/Server Computing? Advantages of Client/Server Computing, Components of Client/Server Computing, the Critical Products, Object Oriented Technology (OOT), Distributed Computing Environment, Application Programming Interface (API) , Multithreaded Processes, Remote Procedure Calls (RPC), Dynamic Data Exchange (DDE) , Object Linking and Embedding (OLE), Developing an Application, Structured Query Language (SQL), Data Definition Language (DDL), Data Manipulation Language (DML) , Client/Server : Where to next?

INTRODUCTION TO KNOWLEDGE DATABASES: Definition and Importance of Knowledge, What is a Knowledge Base System? , Difference between a Knowledge Base System and a Database System, Knowledge Representation Schemes, Rule Based Representation, Frame Based Representation, Semantic Nets, Knowledge Representation Using Logic.

IV-SEM BCA
CS -64: INTRODUCTION TO COMPUTERORGANISATION (ICO)
F.M -80 Time-3hrs

UNIT-1: HARDWARE CONCEPTS: INTRODUCTION AND DATA REPRESENTATION
The von Neumann Architecture. Computers: Then and Now. Data Representation. Instruction Execution.
DIGITAL LOGIC CIRCUITS: Boolean Algebra. Logic Gates. Combinational Circuits. Sequential Circuits. Interconnection Structures.
UNIT-2: MEMORY ORGANISATION: Memory System. Characteristics Terms for various Memory Devices. Random Access Memory. External/Auxiliary Memory. High Speed Memories.
INPUT/OUTPUT ORGANISATION: Input/Output Module. Input/output Techniques. Direct Memory Access. Input/output Processors. External Interface.
UNIT- 3: INSTRUCTION SETS: Instruction Set Characteristics. Addressing Schemes. Instruction Format Design. Example of Instruction Set.
REGISTER ORGANISATION AND MICRO- OPERATIONS: Basic Structure of the CPU. An Advanced Structure. Register Organization. Micro-operations. Instruction Execution and Micro-operations.
ALU AND CONTROL UNIT ORGANISATION: ALU Organization. Control Unit Organization.
UNIT-4: MICROPROGRMMED CONTROL UNIT: What is a Micro-Programmed Control unit? Wilkes Control. The Microinstruction. A Simple Structure of Control Unit. Microinstruction Sequencing. Microinstruction Execution. Machine Startup.
MICROPROCESSORS AND ASSEMBLY LANGUAGE PROGRAMMING
MICROPROCESSOR ARCHITECTURE: Microcomputer Architecture. CPU Components. CPU Registers. Instruction Set. Addressing Modes. Introduction to Motorola 68000 Microprocessors.
UNIT-5: INTRODUCTION TO ASSEMBLY LANGUAGE: Introduction to Assembly Language. Assembly Language Fundamentals. Input/output Services. Assembly Language Program Development Tools. A Final Look at the Assembly Language Programs. A Complete Example.
ASSEMBLY LANGUAGE PROGRAMMING (PART - I)
Simple Assembly Programs. Programming with Loops and Comparisons. Programming for Arithmetic and String Operations.
ASSEMBLY LANGUAGE PROGRAMMING (PART-II)
Arrays. Modular Programming. Interfacing Assembly Language Routines to High Level Language Programs. Interrupts

IV-SEM BCA
CS -66 : MULTIMEDIA AND ITS APPLICATIONS (MA)
F.M -80 Time-3hrs

UNIT -1: AN OVERVIEW OF MULTIMEDIA
Multimedia - The Concept. Hardware for Multimedia Computer. Software for Multimedia. Components of Multimedia. Multimedia-Design, Production and Distribution.
UNIT -2: APPLICATIONS OF MULTIMEDIA
Application Areas for Multimedia. Publishing Industry and Multimedia. Communication Technology and Multimedia Services. Multimedia in Business.
UNIT-3: Multimedia Pedagogues: Interactive Systems for Teaching and Learning. Concepts for Distributed Learning Environment. A Medical Application: Med net - A Medical Collaboration and Consultation System. Review Questions.
UNIT -4: MULTIMEDIA AUTHORING TOOLS
Multimedia Development Tools. Features of Authoring Software. Authoring Tools. Quick Time. Hypertext. Applications of Hypertext. Elements of Hypertext. Review Questions.
UNIT -5: MULTIMEDIA DEVELOPMENT - ISSUES AND SUGGESTIONS
Learning Interface Design. Planning the Multimedia Programme/Application. Development TIPS of Multimedia Building Blocks. Multimedia Authoring.

IV-SEM BCA

CSL -65: WINDOWS PROGRAMMING LAB(WPL)

F.M -100 Time-3hrs

VISUAL BASIC: INTRODUCTION: Start and Exit Visual Basic. Visual Basic Interface. Debug Window. Print Command. Visual Basic Arithmetic Operators. **VARIABLES AND FUNCTIONS:** What are Variables? Variable Names. Variable Types. Range of the Variable Values. Functions.

BUILDING A PROJECT & CUSTOMIZING FORMS : About Project. What is a Form? Form Properties. Form Tools.

VISUAL BASIC CONTROLS: What is a Control? What is a Custom Control? Controls in a Form.

FUNCTIONS & PROCEDURES: Functions and Procedures. Form, Standard & Class Module. Sub Procedure. Do-Event Functions. Control Arrays.

ACCESSING DATA BASE : What is a Database? Using Data Manager. Creating a Data Base. Creating a New Table. Attaching a Table. Changing Design of an Existing Table. Creating Indexes. Working with Data.

CREATING FORM WITH DATA CONTROLS : What is Data Control? What is Data-Aware Control? Creating a Form Using Data Controls. Manipulating Data. Creating the Menu Bar. Displaying a Menu Item Code.

OBJECT LINKING & EMBEDDING: Basics of OLE. The OLE Icon. Terms Used in OLE. OLE Automation. Using OLE Control Popup-Menu. Creating OLE Object at Design Time. Creating Part of an OLE Object. Testing Embedding/Linking.

WINDOWS PROGRAMMING USING VISUAL BASIC 6.0: Starting an Era of Visual Software Development. RAD (Rapid Application Development) Tools. Some Visual Components. How does Basic Interface Component Act. Creating and Linking Object Through Basic Programming. Activity.

ADVANCED FEATURES OF VISUAL BASIC 6.0: Identification of Some Advanced Features of Visual Basic 6.0. Objectives. Employment of Features and Some More Examples.

ACTIVEX AND WINDOWS API: Creating ActiveX DLLs. Using Windows API in Visual Basic IDE

IV-Sem BCA

CSL -67: RDBMS LAB

F.M -100 Time-3hrs

RDBMS TERMINOLOGY: Some Definitions. The Definition Related to Relational Model. Relational Data Integrity. Data Dictionary Checklist.

OVERVIEW OF LOGICAL DATABASE DESIGN: The Steps of Database Design. ER Model. ER Model Basics. Attributes. Relationship. Weak Entities. Components of an E-R diagram. ER Diagram Development Examples.

OVERVIEW OF NORMALISATION: Redundancy and Associated Problems. Role of Normalization. Single- Valued Dependencies. Single Valued Normalizations. Desirable Properties of Decompositions. Multivalued Dependencies. Multivalued Normalization - Fourth Normal Form. The Fifth Normal Form. Rules of Data Normalization.

PRACTICAL ON RELATIONAL DATABASE MANAGEMENT SYSTEMS : Entity- Relationship Diagram. Functional Dependency and Normalization. Structured Query Language (SQL). Microsoft-Access. Views and Security Using SQL.

RDBMS LAB INTRODUCTION TO MS ACCESS : INTRODUCING MICROSOFT ACCESS

What is a Database Management System (DBMS)? What is a Microsoft Access Database? Tables and Queries. Forms and Reports.

MICROSOFT ACCESS BASICS : Starting and Quitting Microsoft Access. Opening a Database. The Database Window. Objects of the Access Database.

WORKING WITH DATABASE : Creating a Microsoft Access Database. Creating Objects. Set Toolbars to your Working Style. **CREATING A TABLE:** Plan Fields and Data Types. Creating a Table. Set Field Properties. Save and Close a Table. Add and Save Records. Edit Records and Close a Table. Modify Fields in a Table. Modify Columns and Rows in a Datasheet. Attach Validation Rule to a Field.

FINDING DATA: Find a Value. Find a Replace. Create and Apply a Filter. Specify Criteria. Sort Records.

CREATING A QUERY: Create a Query. The Query Window. Join Tables. Select Fields. Specify Criteria. Sort Records. Calculate Totals. Modify a Query. Save a Query. **CREATING A FORM:** Create a Form with a Form Wizard. View Records in a Form. Add, Delete and Save Records. Save and Close a Form.

CUSTOMISING YOUR FORM : Change a Form's Design. Select and Resize Controls. Move and Delete Controls. Change Fonts, Size and Colour of Text.

SHOWING DATA FROM MORE THAN ONE TABLE ON A FORM: Create a Form that Contains a Sub Form. Use a Query to Include Fields from More Than One Table.
CREATING REPORTS AND MAILING LABELS: Use Reports to Present Data. Create a Report. Preview, Print and Save a Report. A Report in Design View. Create and Print Mailing Labels.

V-SEM BCA

CS -68: COMPUTER NETWORKS (CN)

F.M-80 Time-3hrs

UNIT -1: NETWORK CLASSIFICATION AND REFERENCE MODELS

What is a Network? Computer Network Goals/Motivation. Applications of Networks. Types of Networks. Reference Model. TCP Reference Model. Difference between OSI Reference Model and TCP Reference Model. IEEE Standards for LANs.

UNIT -2: DATA TRANSMISSION & MULTIPLEXING

Transmission Terminology. Analog and Digital Data Transmission. Transmission Media. Multiplexing.

UNIT -3: MEDIUM ACCESS CONTROL AND DATA LINK LAYER

Data Link Layer. Medium Access Control Sub -layer.

UNIT -4: NETWORK, TRANSPORT (TCP/IP) AND APPLICATION LAYER

Network Layer. Transport Layer. Application Layer. Remote Procedure Call (RPC). File Transfer Protocol (FTP). Telnet.

NETWORK DEVICES & TECHNOLOGY

NETWORK DEVICES - I: Network Devices.

NETWORK DEVICES - II: Network Devices.

INTEGRATED SERVICES DIGITAL NETWORK (ISDN): Base band and Broadband Communication. ISDN Services: BRI and PRI. Advantage of ISDN. ISDN Application.

UNIT-5: ASYNCHRONOUS TRANSFER MODE (ATM): Switching Techniques. How compatible is ATM as Technology. ATM Layered Architecture in comparison with OSI model. How ATM Protocol Works. The ATM Network. The ATM Cell. ATM Classes of Services. ATM Traffic Control. Benefits of ATM. ATM Applications.

V-SEM BCA
CS -69:TCP/IP PROGRAMMING
F.M-80 Time-3hrs

TCP/IP FUNDAMENTALS
UNIT -1: INTRODUCTION TO TCP/IP: TCP/IP Layering. The TCP/IP Stack. Internet Addressing.

UNIT-2: Domain Name System (DNS). Client/Server Model.

UNIT -3: INTERNET PROTOCOL: IP Header.

UNIT -4: TRANSMISION CONTROL PROTOCOL: Basic Terminology. Important Features of TCP.

UNIT -5: User Datagram Protocol (UDP).

V-SEM BCA

CS -70: INTRODUCTION TO SOFTWARE ENGINEERING (ISE)

F.M -80 Time-3hrs

UNIT -1: INTRODUCTION TO SOFTWARE PRODUCT, COMPONENT & CHARACTERISTICS ENGINEERING

Software Product, Components and Characteristics. Software Engineering Concepts. Documentation of the Software Product. Software Process and Models.

SOFTWARE PROCESS MANAGEMENT: Software Process Management. Humane Resource Management. The Software Team. Organization, Information and Decision. Problem Identification. Software Crisis. Role of a System Analyst.

UNIT -2: PROJECT PLANNING AND CONTROL: Project Planning and Control. Project Scheduling. Project Standards. Project Outsourcing,

RISK MANAGEMENT CONCEPTS: Introduction and Risk Management Concepts, Benchmark Testing.

UNIT -3: SOFTWARE PERFORMANCE: Customer Friendliness. Software Reliability. Software Reviews. Software Up gradation. Software Tools and Environment. Software Libraries and Tool- Kits. Software Modules. Reapplication of Software Modules. Development Tools.

QUALITY CONCEPTS: Important Qualities of Software Product and Process, Principles of Software Engineering.

UNIT-4: SOFTWARE METHDOLOGY: AN OBJECT ORIENTED CONCEPTS

The Evolving Role of Software. An Industry Perspective. Some Initial Solutions. Structured Methodologies. Major Influencing Factors. Using the Methodology. Choosing the Right Methodology.

Implementing a Methodology. Which Tools are you Most Likely to Use? Current Generation of Software Developing Tools. 4GLs. Considerations in Application Development.

UNIT -5: CASE TOOLS

Software Crisis. What is wrong with Current Development Methods? An Engineering Approach to Software. Why Case Fails? Case Tools. Factors Affecting Software Development. The Benefits of Using CASE.

V-SEM BCA

CS -71: COMPUTER ORIENTED NUMERICAL TECHNIQUES (CONT)

F.M -80 Time-3hrs

UNIT -1: COMPUTER ARITHEMETIC: Floating-Point Arithmetic and Errors. Some Pitfalls in Computation.

UNIT-2: SOULUTION OF NON-LINEAR EQUATIONS: Iterative Methods for Locating Roots Chord Methods for Finding Roots. Iterative Methods and Convergence Criteria.

UNIT-3: SOLUTION OF LINEAR ALGEBRAIC EQUATIONS.

Preliminaries. Direct Methods. Iterative Methods.

UNIT-4: INTERPOLATION :

Lagrange's Form. Newton Form of the Interpolating Polynomial. Interpolation at Equally Spaced Points.

UNIT-5: Numerical Differentiation, Numerical Integration, Numerical solution of ordinary differential equation, Numerical solution of differential equations using Runge- Kutta Methods.

V-SEM BCA

CSL- 68 & 69 (COMPUTER NETWORK & TCP/IP LAB)

F.M-100(50+50) Time-3hrs

1. Computer networking concept
2. TCP/IP programming

VI-SEM BCA
CS -72: C++ AND OBJECT ORIENTED PROGRAMMING(C++&OOP)
F.M-80 Time-3hrs

UNIT -1: WHAT IS OBJECT ORIENTED PROGRAMMING? Object Oriented Programming Paradigm. Advantages of Object Oriented Programming. Some Applications of Object Oriented Programming. The Object Orientation. Object Oriented Languages.
OBJECT ORIENTED PROGRAMMING SYSTEM: What is OOPS? Class. Inheritance. Abstraction. Encapsulation & Information Hiding. Polymorphism.

UNIT -2: ADVANCED CONCEPTS: Dynamism. Structuring Programs. Reusability. Organizing Object-Oriented Projects.
INTRODUCTION TO OBJECT ORIENTED LANGUAGES: Objective-C. Python. C# (C Sharp). Eiffel. Modula-3. Small Talk. Object REXX. JAVA. BETA. Various Object Oriented Programming Languages Comparative Chart.

UNIT -3: AN INTRODUCTION TO UNIFIED MODELING LANGUAGE (UML): What is UML? Definitions. The UML Diagrams.
C++ -AN INTRODUCTION: OVERVIEW OF C++ Programming Paradigms. C++ Programming Language: A re-visit of Concepts of C/C++. Functions and Files.
CLASSES AND OBJECTS: Definition and Declaration of a Class. Scope Resolution Operation. Private and Public Member Functions. Creating Objects. Accessing Class Data Members and Member Functions. Arrays Objects. Objects as Function Arguments.

UNIT -4: OPERATOR OVERLOADING: Operator Functions. Large Objects. Assignment and Initialization. Subscripting. Increment. Decrement Operator. Friends.

UNIT -5: INHERITANCE-EXTENDING CLASSES: Concept of Inheritance. Base Class and Derived Class. Visibility Modes. Single Inheritance. Multiple Inheritances. Nested Classes. Virtual Functions.
STREAMS AND TEMPLATES: Output. Input. Files and Streams. Templates. Exception Handling.

VI-SEM BCA
CS -73: THEORY OF COMPUTATION (TOC)
F.M -80 Time-3hrs

UNIT -1: FINITE AUTOMATA AND LANGUAGES: Regular Expressions. Regular Languages. Finite Automata.
NON-DETERMINISTIC FINITE AUTOMATA: Non-Deterministic Finite Automata NFA. Equivalence of NFA and DFA. Equivalence of #-NFA's and NFA's. Pumping Lemma. Closure Properties (Regular Languages and Finite Automata). Equivalence of Regular Expression and FA.
UNIT -2: CONTEXT FREE GRAMMAR
Grammar and its Classification. Context Free Grammar (CFG). Pushdown Automata (PDA). Non-Context Free Languages, Pumping Lemma for CFL. Equivalence of Context free Grammar and Push Down Automata.
UNIT -3: TURNING MACHINE
Prelude to Formal Definition. Turning Machine: Formal Definition and Examples. Instantaneous Description and Transition Diagram. Some Formal Definitions. Observations. Turning Machine as Computer of Functions. Modular Construction of Complex Turning Machines.
RECURSIVE FUNCTION THEORY : Some Recursive Definitions. Partial, Total and Constant Functions. Primitive Recursive Functions. Intuitive Introduction to Primitive Recursion. Primitive Recursion is Weak Technique.The Techniques of unbounded Minimalisation, Partial Recursion and #-Recursion.

UNIT -4: COMPUTABILITY/DECIDABILITY
Decidable and Undecidable Problems. The Halting Problem. Reduction to another Undecidable Problem. Undecidability of Post Correspondence Problem. Undecidability Problem for Context Free Languages. Other Undecidable Problems.

UNIT -5: COMPLEXITY
Notations for the Growth Rates of Functions. Classifications of Problems. Reduction, NP-Complete and NP-Hard Problems. Establishing NP-Completeness of Problems.
APPLICATIONS: Applications of Finite Automata. Applications of Regular Expression. Application of Context-Free Grammars.

CS -74 : INTRODUCTION TO INTERNET PROGRAMMING(IIP)
F.M -80 Time-3hrs

UNIT -1: INTRODUCTION TO JAVA: Applets and Applications. Java Buzzwords. The Java Platform. Java Libraries. Starting with Java.
DATA TYPES, OPERATORS AND ARRAYS: Data Types in Java. Operators. Java Keywords. Mixing Data types. Type Casting. Programming Constructs in Java. Arrays.

UNIT -2: CLASSES AND OBJECTS IN JAVA
Classes and Objects. Constructor. Sub classing. The Extends Keywords. The Instance of Operator. Static Variables and Methods. The Final Keyword. Access Control. Method Overriding. Abstract Classes. Polymorphism. Wrapper Classes. Inner Classes.
EXCEPTION HANDLING: Exception Classes. Using Try and Catch. Handling Multiple Exceptions. Sequencing Catch Blocks. Using Finally. Built-in Exception. Catching Exceptions. User Defined Exceptions.
UNIT -3: PACKAGES AND INTERFACES: Creating Packages. Adding Classes to Existing Packages. Interfaces. Exceptions.
ADVANCED CONCEPTS
UNIT -4: MULTITHREADED PROGRAMMING
Multithreading: an Introduction. The Main Thread. Java Thread Model. Thread Priorities. Synchronization in Java. Inter-thread Communication.
I/O IN JAVA : I/O Basics. Streams and Stream Classes. The Predefined Streams. Reading from, and Writing to, Console. Reading and Writing Files. The Transient and Volatile Modifiers. Using Native
Methods.
UNIT -5: APPLETS: The Applet Class. Applet Architecture. An Applet Skeleton: Initialization and Termination. Handling Events. HTML Applet Tag.
GRAPHICS AND USER INTERFACES: Graphics Contexts and Graphics Objects. User Interface Components. Building User Interface with AWT. Swing-based GUI. Layouts and Layout Manager. Container.

VI-SEM BCA
CS -75: INTRANET ADMINISTRATION (IA)
F.M -80 Time-3hrs

UNIT -1: FUNDAMENTALS OF INTRANET
The Intranet. Advantages of the Intranet. Types of Intranet. Software and Hardware Requirement for an Intranet. Application Areas. Future of the Intranet. Key Intranet Terms.

UNIT -2: INTRANET SECURITY: Security Concerns. Threats. Security Solutions. Advice from Security Experts.

UNIT -3: INTRANET HARDWARE AND SOFTWARE: Selection of Computing Infrastructure. Hardware. Network Environment. Software. Other Aspects.

INTRANET TOOLS & CONFIGURATION:

UNIT -4: CONFIGURING INTRANET: Configuring Web Server. Installation. Networks and Security. Tuning Application over Intranet.

UNIT -5: INTRANET AUTHORING AND MANAGEMENT TOOLS: Intranet Authoring Tools. Intranet Management Tools.
INTRANET PROTOCOLS: Basic Intranet Protocols. Web Server Specific Protocols. Latest Protocols.

VI-SEM BCA

CSL- 72 (C++ & Java LAB)

F.M-100 Time-3hrs

1. c++ programming

Classes, objects, inheritance, polymorphism, overloading, templates, exception handling

2. Java programming: classes & objects in java, exception handling, packages & interfaces, multithreading, applets, graphics etc.

VI-SEM BCA

CS -76 : PROJECT

F.M -100 Time-3hrs

The project work constitutes a major component in most of the professional programmes and it is to be carried out with due care and executed with seriousness by the candidates.

1. You will receive CS-76 Project Guidelines in 5th Semester after examination.
2. Approval of project synopsis before project from project guide which is written in A4 size paper (10 to 12 pages).
3. Project categories: Networking, Operating System, Application Development, Any other packages Using any languages and databases.
4. Project report should be hard binding (book binding)
5. Project report about 70 to 100 pages minimum and both side of the pages be 10% variation.
6. Project contains 100 marks (Report =75 marks and Viva =25 marks)
7. Project report should be submitted before project valuation date with guide's bio-data.
8. Project guide (MCA, M.Tech, and Ph.D in Comp. Sc.) should have minimum 2-3 years experience in working or teaching.
9. Guide can take 10 students under the guidance at one time.
10. Contact course coordinator of program for further information regarding project.

****End ****