

# Bachelor of Computer Applications

## Semester – I

S.No.	Course Code	Course Name	Credits ( L T P )
1.	LING 301	Structured and Spoken English	3(2+0+1)
2.	GPT 301	Moral & Value Education	2(2+0+0)
3.	MAS 341	Foundation Course in Mathematics	4(4+0+0)
4.	COMP 413	Fundamentals of Computer Science	4(2+1+1)
5.	COMP 412	Problem Solving & Programming in C	5(2+1+2)
		<b>Total Credits</b>	<b>18</b>

## Semester – II

S.No.	Course Code	Course Name	Credits ( L T P )
6.	BAM 327	Business Communication	3(2+1+0)
7.	MAS 461	Numerical & Statistical Computing	4(3+0+1)
8.	COMP 431	Algorithms & Data Structures through C	4(3+0+1)
9.	COMP 515	Computer Organization	4(3+1+0)
10.	COMP 421	Fundamentals of Data Base Management Systems	4(3+1+0)
		<b>Total Credits</b>	<b>19</b>

## Semester – III

S.No.	Course Code	Course Name	Credits( L T P )
11.	BAM 213	Principles of Management	3(2+1+0)
12.	BAM 302	Principles of Accounting	3(2+1+0)
13.	SES 415	Environmental Studies -I	2(2+0+0)
14.	COMP 432	System Analysis and Design	3(2+1+0)
15.	COMP 532	Object Oriented Systems and C++	4(3+0+1)
16.	COMP 522	Fundamentals of Operating System	4(3+0+1)
		<b>Total Credits</b>	<b>19</b>

## Semester – IV

S.No.	Course Code	Course Name	Credits( L T P )
17.	BAM 544	Management Information Systems	3(2+1+0)
18.	BAM 317	Organizational Behavior	3(3+0+0)
19.	SES 416	Environmental Studies- II	2(2+0+0)
20.	COMP 652	Java Programming	4(2+0+2)
21.	COMP 561	Internet and Web Technologies	5(3+0+2)
22.	COMP 531	Relational Database Management System	4(3+0+1)
		<b>Total Credits</b>	<b>21</b>

## Semester – V

S.No.	Course Code	Course Name	Credits( L T P )
23.	COMP 647	Fundamentals of Computer Graphics & Multimedia	4(2+1+1)
24.	COMP 623	Data Communications and Networking	4(2+1+1)
25.	COMP 552	Software Projects Management	4(3+1+0)
26.	COMP 624	. Net Frame Work & C#	4(2+1+1)
27.	BAM 431	Financial Management	4(3+1+0)
28.	COMP 580	Seminar	2(0+0+2)
		<b>Total Credits</b>	<b>22</b>

## Semester – VI

S.No.	Course Code	Course Name	Credits( L T P )
29.	COMP 662	Linux and Shell Programming	4(2+1+1)
30.	COMP 663	Latest Trends in I.T.	4(2+2+0)
31.	COMP 699	Project	9(0+0+9)
		<b>Total Credits</b>	<b>17</b>

## Structured and Spoken English

**Course Code: LING 301**

**Credit: 3(2+1+0)**

### Grammar:

1. Use of Articles and Prepositions
2. Figures of Speech
3. Idioms and Phrases
4. Vocabulary
5. Synonyms
  
6. Antonyms
  
7. One word Substitution
  
8. Homophones and Homonyms
  
9. Punctuations

### Composition:

1. Letter Writing
2. Application Writing
3. Précis
4. Essay Writing
5. Report Writing (With special stress on Scientific / Technical Reports)

### References:

Wren and Martin, "High School English Grammar and Compositions"  
T.P Mishra and M.C Gupta, "A new style to General English"  
Dr.Raghunath Thilak, "Letter Writing and Secretarial Practice"

## Introduction to I.T. & P.C. Software

**Course Code: COMP 411**

**Credit: 5(3+1+1)**

Information Technology

Information Concepts: **Data and Information Characteristics of Information**

**Computer Appreciation: Definition**, characteristics and applications of Digital Computers

Hardware concepts, Block Diagram, CPU, Input and Output Devices, Storage Devices Software Concepts, System Software, Application Software

**Number Systems:** Basic Concepts Binary, Octal, Decimal and Hexadecimal Conversion from one to another

**Operating Systems:** Concepts of DOS, Commands of DOS, Windows & GUI

*Introduction to Computer Communication and Networks Information Technology Applications Emerging trends in the field of computers*

Software Perspective Hardware perspective

P.C. Software: **Introduction to MS Word, MS Excel, MS PowerPoint, and MS Access**

**Texts:**

P.K Sinha & P.Sinha, “ Foundation of Computing”, BPB  
S. Sagman, “Microsoft Office 2000 for Windows”, Pearson

**References:**

Turban, Mclean & Weatherbe, “Information Technology and Management”, John Wiley and Sons  
V.K Jain, “Fundamentals of IT and Computer Programming”, Katson Books  
Cyganski, ”Information Technology”, Pearson  
P.C. Software for Windows 98 made simple by R. K. Taxali, Publisher: TMH.

## **Computer Organization**

**Course Code: COMP 515****Credits: 4(3+1+0)****UNIT –I**

Introduction : Analog and Morden Digital Computers

Digital logic circuits and Components: Logic gates, Boolean Algebra, K-Map Simplification, Combination Circuits: Half Adder, Full Adder, Decoder, Encoders, Multiplexers, Demultiplexer, Sequential Circuits : Flip Flops, Registers, Binary Counters, Memory Unit

**UNIT-II**

Data Representation: Data Types, Complements, Fixed-Point Representation, Floating Point Representation, Other Binary Codes

**UNIT-III**

Register Transfer & Microoperation: Register Transfer, Bus and Memory Transfer, Arithmetic Microoperations: Binary Adder, Binary Subtractor, Binary Adder – Subtractor, Binary Increment and Binary Decrement, Arithmetic Circuit. Logical Microoperations: AND, OR, NOT, XOR, Logic Circuit, Combined Arithmetic and Logic Circuit.

**UNIT-IV**

Memory and Processor Organization : Memory Hierarchy, Main Memory (RAM & ROM) Associative memory, cache memory, Auxiliary memory, General Register Organization, Stack Organisation , Addressing mods, Instruction Formats. RISC and CISC.

**UNIT-V**

Introduction to Classification of Computers and Concepts to Pipeline: Flynn’s Classification, Parallel Architecture Classification , Pipelining of processes.

**Text Books:**

Computer System Architecture – M. Mano, Pearson Ed.

**References:**

Morris Mano, “Computer System Architecture”, Prentic Hall India Private Limited.

Morris Mano, “Digital Logic and Computer Design”, Prentic Hall India Private Limited.

William Stallings, “Computer Organization & Architecture”, Prentic Hall India P Ltd.

### **PROBLEM SOLVING & PROGRAMMING IN C**

**Course Code: COMP-412****Credits: 4(2+0+2)****Unit – I**

**Introduction:** History of ‘C’ language, Algorithms and Flowcharts, Developing algorithm and flowchart for simple problems.

**‘C’ basics:** character set, Identifiers & keywords, Data types, Constants, Variables, Operators, Symbolic constants, Expression statements, Compound statements, Structure of C program. Input and Output Statements.

## **Unit – II**

**'C' constructs:** if statements & its forms, goto statement, while statement, for statement, do...while statement, break and continue statement, nesting concepts, switch statement.

## **Unit – III**

**Arrays:** definition, types of Arrays, declaring Arrays, i/o operations on Arrays.

**Functions:** basics of functions, applications, function declaration, definition, scope, parameter passing and recursion.

## **Unit – IV**

**Pointers:** definition, applications of pointers: pointer to Arrays, call by reference in functions.

**Character Handling:** Strings, standard library string functions, and two-dimensional array of characters, array of pointers to strings.

## **Unit-V**

**Structures:** Basics of Structures, Structure and Functions, introduction to union.

**File handling:** File concepts, file creation, I/O operations on files, file functions, working with text files

### **TEXT:**

1. Yeshwant Kanetkar, "Let us C", BPB Publications, 2002
2. B. Kernighan & D. Ritchie, "The ANSI C programming Language", PHI, 2000

### **REFERENCES:**

1. E. Balaguruswamy, "Programming in ANSI C", TMH, 1999
2. AI Kelly and Ira Pohl, "A Book in C", (4<sup>th</sup> Edition), Addison Wesley, 1999.
3. R.G. Dromey, "How to solve it by computer", PHI, 1992

## **Moral & Value Education**

**Course Code: GPT 301**

**Credits: 2(2+0+0)**

My country and my people, the many Indians, being and becoming an Indian, Nationalism and Internationalism.

Some life issues – Love, Sex, and Marriage: Men and money-value of time, Meaning of work, human communication, Human suffering, Addiction, Ecology, Women's Issues

Understanding one's neighbour, neighbourhood groups: their structure and functions, patterns of social interaction of group dynamics

Preparation of career, choice of vocation, motivation for study and research, the present education system, curriculum and syllabus, teaching methods, examination and work experience

Definition of value education, moral and ethics, laws and morale based on Ten Commandments and two great commandments

Discovery of self, self awareness, growth of intellect-man's spiritual nature emotions, will, respect the rights of life, Liberty, Property, Truth reputation

Sin, Origin of Sin, Manifestation of Sin, Results of Sin, The remedy of sin, Sin as an act, Sin as a state, Sin as a nature

Conscience-as defined in Oxford dictionary and Winston dictionary, types of consciousness (Such as evil, Convicted, Purged, Pure, Weak, Good, Void of offence)

## Introduction to Database Management System

**Course Code: COMP 421**

**Credit: 4(3+1+0)**

### UNIT-I

**Introduction:** Why Database , Characteristics of Data in Database, DBMS, What is database, Advantages of DBMS.

**Database Architecture and Molding:** Conceptual, Physical and Logical database models, Role of DBA, Database Design

**Data Modeling using the Entity Relationship Models:** Basic concepts and notations for ER diagram, mapping constraints, keys: super key, candidate key, primary key, Generalization and Specialization, Aggregation, Reduction of an E-R diagrams to tables, extended ER models

### UNIT-II

**Relational data Model and Languages:** Relational data Model Concepts, Relational algebra, Relational calculus, tuple domain calculus

### UNIT-III

**Database Design:**First Normal Form, Pitfalls in Relational -Database Design, Functional dependencies, Decomposition, Desirable properties of Decomposition, Normal Forms: Second, Third, BCNF, Fourth and Fifth normal forms

### UNIT-IV

**Concurrency Control:** Locking techniques for concurrency control.

### UNIT-V

**Recovery System:**Failure classification, Recovery and Atomicity, Recovery Techniques: Log-Based and Shadow Paging

**Introduction to Database System Architecture:**Distributed database, object oriented database management system, Client/server database, and knowledge database.

### References:

Henry F. Korth, "Database system concept", T MH  
S.B. Navathe, "Database Management System", Wesley Addition  
Vipin Desai, "Database Management System", BPB

## Information System Analysis and Design

**Course Code: COMP 521**

**Credits: 3(2+1+0)**

**Overview:**System concepts & information system environmental.System developmental life cycle.Role of the System Analyst.

**System Analysis:**System Planning & the initial Investigation.Information gathering.The tools of structured Analysis.Feasibility study.Cost Benefit Analysis.

**System Design:**The process and stages of System Design.Input/Output and Forms Design.File Organization & Data Base Design.

**System Implementation :**System Testing & Quality Assurance Implementation & Software Maintenance.

**References:**

Elias M. Awad, “System Analysis & Design”, Galgotia Publications (P) Ltd.

Jeffery & Ritter, “System Analysis & Design”

### **Principles of Management**

**Course Code: BAM 213**

**Credits: 3(2+1+0)**

1. Nature and Functions of Management
2. Development of Management Thought
3. Co-ordination
4. Planning
5. Decision Making
6. Organizing
7. Delegation of Authority
8. Staffing, Training & Development
9. Direction
10. Communication
11. Leadership
12. Controlling

**References:**

Koontz & Weirich, “Essentials of Management”

L.M. Prasad, “Principles and Practices of Management”

Stoner, Gilbert & Freeman, “Management”

### **Foundation Course in Mathematics**

**Course Code: MAS 341**

**Credits 4(4+0+0)**

**Algebra:**Elementary concepts of set – Theory: Types of sets, their representation by Venn – Diagrams.

Theory of quadratic & cubic equations, Sequence & Series: Arithmetic, Geometric & Harmonic Progressions (elementary problems only). Matrices: types, addition, subtraction, multiplication, adjoint and inverse. Evaluation of Determinants using their properties. Solution of homogeneous & non-homogeneous equations. Binomial-Theorem (for +ve index), Elementary-concepts of Permutations and Combinations and Probability

**Trigonometry:**Trigonometrical-ratios, Sum & difference relations of two angles, expression of product of ratios as their sum and difference of angles, Relation of multiple and sub-multiple angles, Complex numbers, De-Moivre's Theorem and elementary problems based on it.

**Differential Calculus:**Functions, Limit, Continuity and Differentiability, Differential-Co-efficient of standard functions (algebraic, trigonometrical, Exponential, logarithmic etc), rules for differentiation, Differentiation of composite, inverse, implicit and parametric functions, Higher order derivatives

**Integral Calculus:**Indefinite integration, Integration by substitution, parts and partial-fraction, Integration of rational, irrational and Trigonometric functions, Definite- Integration and its properties.

Vector Algebra:Vectors and Scalar quantities, identification, Linear-operations in vectors, Dot & Cross Products Coordinate Geometry(2 Dim ) Standard equations of curves and their identifications.

**References:**

Hall and Knight, “Algebra”

S.L Loney, “Trigonometry”

S.L Loney, “Co-ordinate Geometry”

Gorakh Prasad, “Differential Calculus and Integral Calculus”

Matambar & Sengar, “Vectors”

## Fundamentals of Operating Systems

**Course Code: COMP 522**

**Credits: 3+0+1)**

**Introduction:** Evolution of operating system – Types of operating system, Batch processing, Multiprocessing, Multiprogramming, Time-sharing, client server, distributed operating system.

**Process Management:** Process concept – Hierarchy of process – critical section Problem Semaphores – Process Coordination Problem – Inter process Communication.

**CPU scheduling:** scheduling concept – scheduling algorithms – algorithms evaluation – Multiprocessor scheduling . Dead lock , dead lock problem – characterization \_ prevention avoidance- Detection recovery – combined approach of dead lock handling .

**Memory Management:** Introduction – Multiple partition, paging segmentation , virtual memory concept – overlays demand paging and performance – page replacements – algorithms – allocation algorithms – thrashing.

**Secondary storage Management:** Physical storage characteristics – disk scheduling – disk scheduling algorithms – sector queuing

**File System:** File operation – Access –method allocation method Directory –system file protection – implementation issues.

**Unix / Linux:** History – shell programming – system administration Vi Editor and other command level details of UNIX – Design principles- File system I/O System –Inter process communication .

**References:**

Shilberschatz, “Operating System Concept”, John Wiley & Sons (Asia) Pvt Ltd .  
Milan Millenkovic, “Opreating System”, TMH

## Algorithm & Data Structure Through ‘C’

**Course Code: COMP-431**

**Credits 4(3+0+1)**

### UNIT-I

**Algorithm:** Introduction, Characteristics, Notation & format conventions of Algorithms, Flow charts, Symbols and Rules, Advantages and disadvantages of Algorithms & Flow charts.

**Overview of Data Structure:** Introduction, Linear and Non-linear Data Structure, Arrays

### UNIT-II

**Stack:** Definition & Concepts of Stack, Operation on Stacks, Implementation of stack as an array, Stack Application: Infix, Postfix & Prefix expressions, Basic definition and examples, Converting an expression from infix to Postfix.

**Queue :** Definition and Concepts of Queue, Queue implementation, Dequeue, Priority Queue, Application of queue

### UNIT-III

**Linked List:** Linked List, Operations on linked lists, Singly linked , Circularity linked list, Doubly Linked list  
Application of linked lists

### UNIT-IV

**Binary Trees:** Definition, terminology and Application of Binary Tree. Representation Basic Operations Traversal algorithms. Binary Search Tree

### UNIT-V

**Searching & Sorting Techniques:** Sorting: Notation & Concepts, Sorting Algorithms, Selection Sort, Bubble Sort, Merge Sort, Quick Sort,

**Searching:** Basic search techniques, Sequential searching, Binary searching, Hashing

**Graphs and their Applications:** Basic concepts of graph., Representation of graph , Graph Traversal : Breadth first search , Depth first Search

**Text Books:**

A.M. Tenenbaum & M.J. Augenstein , “ Data Structures using C&C++” PHI Horowitz and sahani , “ Fundamentals of Data structure “, Galgotia Publication Pvt. Ltd.

**References :**

Jean Paul Trembley G. Sorenson, “An Introduction of Data Structure with Applications”, TMH  
A.M.Tenenbaum & M.J. Augenstein, “Data Structures using C & C++”, Prentice Hall  
Rajni Jindan, “Data Structures using C”, Umesh Publications N.Delhi.

## Management Information Systems

**Course Code: BAM 544**

**Credit: 3 (2+0+1)**

- Concepts of Management Information System
- Information Systems and System Organization
- Functions of Computer
- Computer and Information Processing
- Information Systems Software
- Enterprise-Wide Computing and Networking
- Alternate System Building Methods
- Information and Knowledge Work System  
Artificial Intelligence
- Controlling Information System  
Office Automation

Practical: MS WORD, MS EXCEL, MS POWERPOINT, MS Access, Fundamentals of INTERNET

### References:

Kenneth Laudon & Jane Laudon, "Management Information System", PHI  
Davis & Olson, "Management Information System", TMH  
Suresh Basandra, "Management Information System" Wheeler Publishing.

## Data Communications and Networking

**Course Code: COMP 623**

**Credit: 4(2+1+1)**

**Introduction:** Concepts of Data Communication and Networks, Network hardware: LAN, WAN, MAN  
Network s/w: Protocol hierarchies, Design issues for the layers, Connection – oriented and connection less services  
Reference Models :OSI and TCP/IP reference models, comparison of the OSI and TCP/IP model  
Example Networks: Novell NetWare, Arpanet, and Internet

**Physical layer:** Signals, Digital and Analog Transmission  
Transmission Media: Twisted pair, Coaxial, Optical Fiber, Wireless Transmission  
Multiplexing: FDM, TDM, WDM  
Switching: Circuit switching, Packet switching, Message Switching

**Data link Layer :** Data link Layer design Issues, Error detection and correction  
Data Link Protocols (HDLC, PPP)  
MAC: Channel allocation problem, multiple access protocols, IEEE standard 802.X for LAN (Ethernet, Token Bus, Token Ring), high speed LANs, Wireless LANs

**Network Layer:** Network layer design issues, routing algorithms, congestion control algorithms (Leaky Bucket and Token Bucket), internetworking, and the network layer in the Internet, Protocols - IP, ICMP, and ARP  
Internetworking devices: repeaters, Bridge, Router, Gateway

**Transport Layer :** Transport service, elements of the transport protocols, the Internet transport protocol (UDP & TCP)

**Application Layer:** Network Security, DNS, Protocols – FTP, HTTP, SMTP, TELNET

### References:

1. Forouzan, "Data Communication and networks", TMH
2. A.S. Tanenbaum, "Computer Networks"

## Principles of Accounting

**Course Code: BAM 302**

**Credits: 3(2+1+0)**

- Meaning, Scope and Objectives of Accounting
- Principles of Accounting: Concepts & Conventions
- Journalizing Transactions
- Ledger, Subsidiary Books of Accounts Including Cash Book
- Rectification of Errors
- Trial Balance



- Preparation of Final Accounts: Trading ACCOUNT
- Profit & Loss Account
- Balance Sheet
- Capital and Revenue Expenditure & Income

**References:**

Mukherjee & Hanif, “Modern Accountancy”

Jain & Narang, “Advanced Accountancy”

S.N. Maheshwari & S.K. Maheshwari, “An introduction to Accountancy”

## **Relational Database Management System**

**Course Code: COMP 531**

**Credit: 4(3+0+1)**

**Overview:**Basic Database Concepts and characteristics, Relational Data base Concepts and its characteristics

Introduction to Oracle

**Introduction to SQL (Structured Query Language) \*** Plus Introduction to SQL \* Plus, SQL Data types

**Data Manipulation and Control:**Data Definition language, Creating tables, Creating a table with Rows from another table, Inserting Values into table, Updating columns of a table, Deleting rows from a table, Querying Database tables, Conditional Retrieval of rows, Working with Null values, Matching a pattern with column from a table, Introduction to Sequences, Database security and privileges, GRANT Command, REVOKE Command, **COMMIT** and ROLLBACK commands

**Querying Multiple Tables:**Equi joins, Cartesian joins, Outer join, Self join, Set operator, Union, Intersect, Minus, Nested Queries

**View:**Introduction to views, Manipulation of Base table through views, Rules for DML statements on join views, Dropping a view

**Functions:**Column Functions, Arithmetic Functions, Character function, Data function, General Functions, Group functions.

**SQL \* Plus Reporting:**Introduction to SQL \* Plus reporting, SQL \* Plus Environment Commands, Manipulating variables, Defining Header, Footer & Column Heading, Formatting columns, Control break reports

**Embedding SQL Statements into Procedural Language (PL):**Introduction to PL/SQL, The advantages of PL/SQL, PL/SQL Block Structure, PL/SQL Architecture, PL/SQL Data types, Variables and Constants, Scope and Visibility of a variable, Assignments & Expressions, Referencing Non PL/SQL variables, Introduction to Built – in – functions, Conditional and Interactive Control, SQL within PL/SQL

**Cursor and Exception handling:**Introduction to cursor and its management in PL/SQL, Cursor manipulation, Implicit cursor & its attributes, Exception handling in PL/SQL, Predefined exceptions, User defined exceptions

**Advanced features of procedural language for database applications:**Subprogram in PL/SQL, Advantages of subprograms, Introduction to procedures, Introduction to functions. Stored packages, Advantages of packages, Dropping procedures, functions and packages

**Triggers:** Introduction to triggers, Types of triggers, Dropping triggers

**Introduction to Object relational database management system (ORDBMS)**What is an object, What is an object technology, Creation of objects, How to maintain database using objects

**References:**

Scott Urman, “ SQL PL/SQL Programming”, TMH

Ivan Byross, “SQL PL/SQL “, BPB

S.B. Navathe, “Database Management System”, Wesley Addition

## **Numerical & Statistical Computing**

**Course Code: MAS 461**

**Credit: 4(3+0+1)**

**Introduction:**Errors in

Numerical Computation, Mathematical Preliminaries, Errors and their Analysis, Machine Computations, Computer Software.

**Algebraic & Transcendental Equation:****Bisection Method**, Iteration Method, Method of False Position, Rate of Convergence, Method for Complex Root, , Newton Raphson Method.

**Interpolation:** Introduction, Errors in Polynomial Interpolation, Finite Differences, Decision of Errors, Newton's Formulae for Interpolation.

**Curve Fitting, Cubic Spline & Approximation:** Introduction, Method of Least Square Curve Fitting Procedures, Fitting a Straight Line, Approximation of functions.

**Numerical Integration & Differentiation:** Introduction, Numerical differentiation, Numerical Integration, Trapezoidal Rule, Simpson 1/3 Rule, Simpson 3/8 Rule.

**Statistical Computation:** Frequency Chart, Correlation, Regression Analysis, Least Square Fit, Polynomial Fit, Linear & Non Linear Regression, Multiple Regression, Statistical Quality Control Methods.

**References:**

Jain, Iyengar, Jain, "Numerical Methods for Scientific & Engineering Computation", New Age International.  
Balaguruswamy, "Numerical Methods", TMH.  
Sastry, "Introductory Method of Numerical Analysis", PHI.

**Fundamentals of Computer Graphics**

**Course Code: COMP 646**

**Credit: 4(2+1+1)**

**Overview of graphics:** Refresh cathode ray tubes Raster scan system Random scan system Color CRT monitor Flat panel displays Liquid crystal display

**Output primitives:** Points and lines Line drawing algorithms Circle generating algorithms Ellipse generating algorithms Polynomials and spline curve

**Two dimensional geometric transformations:** Basic transformations Matrix representation and homogeneous coordinates Composite transformations Reflection and shear

**Two dimensional viewing:** Viewing pipeline Viewing coordinate reference Window – To – viewport coordinate transformation Clipping operations Point clipping Line clipping Polygon clipping

**Three dimensional geometric transformations:** Translation Rotation Scaling Reflection Three dimensional view Viewing pipeline Viewing coordinates Projections

**References:**

Donald Hearn & M. Pauline Baker, "Computer Graphics", Prentice Hall Ltd.  
G.S. Baluja, "Computer Graphics"  
Yashavant Kanetkar, "Graphics under C", BPB  
D. Rogers and J. Adams, "Mathematical Elements for Computer Graphics", TMH  
David F. Rogers, "Procedural Elements for Computer Graphics", TMH

**Financial Management**

**Course Code: BAM 431**

**Credit: 4(3+1+0)**

Scope & function of financial management  
Financial statement analysis: fund flow analysis, cash flow analysis, ratio analysis Concept of valuation  
Theories of Capitalization  
Capital Structure: Financial & operation Leverage  
Capital Budgeting  
Working capital management: Cash management, Inventory management, Receivables management

**References:**

Khan & Jain, "Financial Management", TMH  
I.M. Pandey -Vikas, "Financial Management"

## Introduction to Visual Basic

**Course Code: COMP 541**

**Credit: 4(2+0+2)**

**Using Visual Basic:** An Introduction to VISUAL BASIC Visual Basic Projects Visual Basic Code Basics Using VISUAL BASIC variables Creating the user interface Making forms to work with Controls Understanding Menus and Toolbars Using VB debugging tools Handling Run time errors

**Object Oriented Programming:** Creating Objects and Classes Advanced Class Concepts Working with Objects and Collections

**Creating printed output:** Using the Printer Object Using Crystal report

**Accessing Data:** Reading and writing Text files VISUAL BASIC Data control Creating Queries in VISUAL BASIC Using Advanced Data Access methods

**Integrating with other applications:** Integrating with MS – OFFICE 97 Integrating with MS – OUT LOOK 97

**Developing for the Internet:** Integrating with Internet Explore Web Development with VB Creating Internet applications Advanced topics The windows API INI files and System registry Using the Package and Development wizard Professional VISUAL BASIC development

### References:

Peter Nortons, "Guide to Visual Basic 6", Techmedia publications.

"Visual Basic 6", BPB publications.

Halvorson, "Learn VISUAL BASIC 6 now", PHI publications

## Business Communication

**Course Code: BAM 327**

**Credit: 3(2+1+0)**

1. Concept of Communication
2. Communication process
3. Barriers to Communication
4. Written Communication-formal Reports, Technical report, Business Correspondence, Notices, research Papers.
5. Oral Communication-Dyadic Communication, Meetings, seminars & Conferences, G.D.Audio Visual Aids.
6. Non-Verbal Communication-Personal Appearance, Postures, Gestures, Facial Expressions, Eye Contact.

### References:

Lesikar & Pettit, "Business Communication"

## Multimedia & its Applications

**Course Code: COMP 551**

**Credit: 4(2+0+2)**

**Multimedia: An Introduction, Text, Images and its processing tools.** Needs and Area - develop Multimedia Software? Multimedia development Team and skills, MAC Vs Windows platform, Basic tools for development of Multimedia Application, Multimedia building blocks, Making simple Multimedia with popular applications. Stages of Multimedia design: Planning, Content analysis, Instructional Design, Preparation of media elements, Integration of media elements authoring, Evolution, Text – Plain Text & Formatted Text, Hyper Text, Text Make-up Language (HTML), Conversion of

Text formats, Object linking & imbedding concept & Text Preparation tools. Fonts editing & Design tools, Text effects, Image-Types of Graphic – Vector & Raster, Attributes of Image resolution, Images Pixel depth, Color, Color palettes, Compression of Images and its effects to quality & storage size, Various File formats – BMP, DIB, EPS, CIF, PEX, PIC, TGA, TIF. File formats conversion, Compression Techniques – REL compression, LZW compression, JPEG factor compression & Wavelet compression processing. Tools – Techniques of capturing image and converting image. Software tools for processing images. Techniques for special text effects using various Software's.

**Digital Sound – Its capturing and editing tools.:** Sound and its attributes – Sound and its effects in Multimedia, Sampling of sound, Frequency, Sound depth, Channels & Sound and Third effects on quality and storage size, Estimation of space of a sound file, Sound Card standard – FM synthesis cards, Waves Table cards, Midi & MP3 files and devices, 3D sounds, Capturing and editing sound waves for Indo.

**Computer Animation – Its Techniques and Development tools.:** Animation and its Basic – Principles of animation and its use in Multimedia Computer system configuration & Peripheral requirements, Software for animation, Effect of resolution Pixel, Depth Image size on quality and storage size, Types of animation, Steps for creating and Generic animation

Animation techniques – Concept of key frames, Tracing and Path, 2D Animation Techniques : Tweaking, Morphing, Color cycling, Walk cycle wrap , Rotation, 3D Animation Techniques : Lofting, Lighting, Revolving inverse kinematics, Morphing key framing various tools for creating animation like Animation Pro, 3D Studio Paint shop, Pro Animation.

**Digital Video and Video Making tools:** Basic of Video – Analog and Digital Video type of Video Computer, System Configuration and Peripheral Required, Video Standard – NTSC, Pal, Secma, HDTV, Video capturing Media / Instruments, Video disk, Compression techniques, File Formats AVI, MJPG, MPEG, Video editing and Movie making tools Quick time video for Window Adobe Premier.

**References:**

Vaughan, "Multimedia making it work", TMH  
Jeffcoate, "Multimedia In Practice – Technology & Applications"

**Object Oriented Analysis & Design**

**Course Code: COMP 651**

**Credit: 4(3+0+1)**

**Overview**

Introduction  
Modeling Concept  
Object Modeling  
Dynamic Modeling  
Functional Modeling

**Design Methodology**

Analysis  
System Design  
Object Design

**Implementation**

From Design To Implementation  
Programming Style  
Object oriented Languages

**References:**

Rumbag, Michel Baha et. al., "Object Oriented Modeling And Design", Prentice Hall India  
Benjamin & Cummins, "Object Oriented Modeling And Design", Redwood City C.A. U.S.A.  
Rebecca Wirfs & Brock, "Designing Object Oriented Softwares", Prentice Hall India.

## Software Projects Management

**Course Code: COMP 552**

**Credit: 4(3+1+0)**

Conventional Software Management

Evolution of Software Economics

Improving Software Economics

Software Management Process Frame Work

Software Management Disciplines

Modern Project Profiles

Next Generation Software Economics

Modern Process Translations

Case Studies and Backup Materials

The COCOMO Cost Estimation Model

Change Metrics

CCPDS-R Case Study

Process Improvement and mapping to CMM.

### References:

Walker Roice, "Principles of Software Engineering Management", Addison Wesley, LPE

L. H. Myers.W, "Industrial Strength Software – Effective Management using Measurement"

Roger S Presman, " Software Engineering : A practitioners approach ", TMT

## Java Programming

**Course Code: COMP 652**

**Credit: 4(2+0+2)**

**Basics of Java:**The creation of Java, Why Java is important to the Internet, Security and portability, What is Byte Code, Java Virtual Machine Object Oriented Concepts :What is object?, Object oriented programming, Abstraction, Encapsulation, Inheritance, Polymorphism

**Basic Constructs:**Data types, Variables , Array, Operators, Control Statements.

**Introduction to classes:**What is class?, The general form of class, Declaring object, Introducing methods in a class, Constructors, Inner and outer class, Exploring the String class.

**Introduction to access control:**Public access control, Private access control, Protected access control, Introduction to static, this and super key, Introduction to final keyword.

**Inheritance:**Basic Concepts, Using supper, Method Overloading, Dynamic method dispatch, Using Abstract Classes, using final with Inheritance.

**Introduction to:**Packages, Interface, Exception handling, Multithreaded Programming

### References:

1. "Programming with Java" by E Balaguruswamy.

2. "HTML 4 unleashed" by Rick Dranell, second edition, Techmedia publication.

3. "Dynamic web publishing" unleashed by Shelley Powers, second edition, Techmedia.

4. Horstmann, "Computing Concepts with Java 2 Essentials", John Wiley.

5. Decker & Hirshfield, "Programming.Java", Vikas Publication.

## Seminar

**Course Code: COMP 580**

**Credit: 2(0+0+2)**

**Objective:**It is devised to enhance the communication skills as well as to enable the students to be updated with the emerging trends.

## Internet and Web Technologies

**Course Code: COMP 561**

**Credit: 5(3+0+1)**

**Introduction to Internet** :Introduction to Internet and World Wide Web, History of Internet, Connection types, Internet domain, How Internet works. Internet Service Provider, Uniform Resource Locator, E-mail, Search Engine, Web Browsers, HTTP, FTP and other Protocols

**HTML**:Introduction to HTML, HTML tags, Structure of HTML Program, Text Formatting, Heading Style, Text Style, Controlling font Size and Color, Creating Lists, Creating Tables, Linking Documents, Frame, Creating Forms

**Dynamic HTML**:Understanding style sheet, Attaching a style sheet to an HTML document, External style Sheets, Setting a default style sheet language, Making style Sheets Cascade, DIV and LAYER tags

**JavaScript**:Introduction, The Document Object, Script Tags, Java Script Variables, Operators, Control Flow and Looping Constructs, Function, Script Event Handlers

**CGI/Perl**:Perl Basics, Perl String, variables, Array, Environment Variables, Operators, Control Flow in Perl, Looping in Perl, Perl Functions, File handling

### References:

Ivan Bayross, “ Web Enabled Commercial Application Development using: HTML, DHTML, JavaScript, Perl CGI”, BPB  
HTML Complete, BPB  
Web Publishing , D’souza

## Introduction to Network Programming (TCP/IP)

**CourseCode: COMP 661**

**Credit 4(2+1+1)**

**Introduction** : The TCP/IP reference model architecture, Comparison of TCP/IP architecture over OSI architecture . Message passing between client/server

**Internet Protocol(IP)**:A virtual network, Internet Architecture and philosophy. connectionless delivery system. Purpose of the Internet protocol.

**Routing IP Datagrams** :Routing in an internet , Direct and Indirect delivery , Table Driven IP Routing . Routing with IP addresses.

**Error and control messages (ICMP)** :The internet control message protocol.Error reporting vs. Error correction ICMP Message DeliveryICMP message formatPing

**Reliable Stream Transport Service(TCP)**:The need for stream delivery ,TCP, Ports Connections and end Points .Passive and Active opens. Segments ,streams and Sequence numbers. TCP segment formats . Establishing a TCP connection . Closing a TCP connection .TCP connection reset.TCP state machine. Reserved TCP port numbers.

**Client/ Server socket applications** : Introduction to client/ server socket application programming ( in Java)

### References:

Davis R , “Windows network programming”, Addison Wesley

Steven R , “Unix Network programming” PHI

Douglas E. Comer “Internetworking with TCP/IP” LP