

Director's Message



Welcome to Colloeege of Commerce, Arts & Science.

I am delighted to welcome you to this institution. Here we understand the challenges that are in store for our students. We, therefore, provide a rich learning environment. A balance of knowledge and application is what this institution provides to its students. Flexibility, breadth and depth are the hallmark of our learning pathways. We value and celebrate achievement and generosity.

Founded on 5th Sept. 1949, College of Commerce is renowned for its outstanding holistic education. Our students success cannot be defined by qualification alone. The students leave the college as dynamic and impactful citizens, equipped to play a leading role in which ever walk of life they choose. We have high class infrastructure with well-equipped computer/IT laboratories/Class room/Auditorium/Seminal Hall, Modernised, Library etc. We are proud of our strong team of meticulously, dedicated and committed faculty and staff.

College of Commerce, Arts & Science is a challenging and exhilarating place to learn. I warmly welcome you to come and visit to experience all that this college has to offer.

With best wishes and blessings.

Prof. (Dr.) Indrajit Prasad Roy

Principal / Director

College of Commerce, Arts & Science

Patna-800 020

Co-Ordinator's Message



The B.Sc. (IT) Department of College of Commerce, Arts & Science, Patliputra University has been a distinguished name in imparting professional education in this field. The course offers one of the most promising venues of a bright career.

We try our best to provide quality education. Fee Structure is such that it may include the students of even weaker section of the Society. There is no compromise with quality even at this economic fee.

With best wishes.

Dr. K. P. Yadav
Co-Ordinator, B.Sc. (IT)
College of Commerce, Arts & Science
Patna-800 020

ABOUT PATLIPUTRA UNIVERSITY



Patliputra University, Patna was established on 18th March, 2018, by the order of the Government of Bihar, vide Letter/memo no. 15/M1-71/2016-700, dated 09.04.2018. All the colleges of Patna and Nalanda districts, Bihar (India), fall under the jurisdiction of the Patliputra University except those attached to the Patna University. The University has control over 25 constituent colleges, two government girls colleges, three minority colleges and a number of affiliated colleges. Many of these colleges are running university-approved post-graduate centres in various subjects besides skill-oriented courses in vocational and technical/professional areas. These affiliated units are governed by their governing local bodies and duly constituted management board approved by the university.



The Headquarter of Patliputra University is in Patna having its present address as "Old Bypass Road, Kankarbagh, Patna-8000 20, Bihar (India)."

The University has set avant-grade International standards in Teaching-Learning and Research with the aid of uniquely conceived innovative approaches that are aimed to propel the quality of higher education to a new height in the country. The ambience of the university is being developed with radical ideas having global perspective in the domain of Education. The students in our colleges are from different corners of the state/region. In order to achieve academic excellence, we are striving to create a student-centric atmosphere that would be sensibly conducive to all stakeholders-viz-students, researchers, academicians, teachers, parents, society, institutions, research organisations, industries, govt. agencies and all kinds of employers. The university aspires to collaborate with several national and international academic bodies, research organisations, universities, industries, govt. agencies and non-government organisations.

In order to facilitate job-oriented degree programmes, the university has introduced several 3 Years degree programmes, such as

1. M.B.A. (Commerce)

2. M.Sc (Bio-Tech)

3. MLIS

4. MCA

5. B.Sc (IT)(Technical Bhawan)

6. BLIS

7. B.C.A.

8. B.B.M. (Commerce)

The Glory of College of Commerce, Arts & Science

College of commerce, Arts & Science, Patna-800020 is a constituent unit of Patliputra University, Patna (Bihar) duly recognized by University Grants Commission. New Delhi under 2(f) and 12(B). The college was established in 1949 by Pt. Indu Shekhar Jha, the founder principal of the College, a man of great vision and the father of commerce education in Bihar.



Coming from a small village called Sabour in Bhagalpur district of Bihar, Pt. Jha was a post graduate in Commerce from Calcutta University. On the advice of and assistance from the late Dr. Rajendra Prasad, the first president of India, Pt. Jha translated his long-cherished dream of starting Commerce education in Bihar from Chapra College Chapra (Bihar) as a department of the college. But, not satisfied with this small beginning, and having a dream of launching an institution on the pattern of London School of Commerce or Sydenham College of Commerce and Economics, Bombay. Pt. Jha soon started campaigning, door to door at the same time, contacting some eminent people in Patna like Late Justice Khalil Ahmad, Late Nageshwar Prasad (Advocate), Late H.B. Chandra, Late Indiraj Bahadur and Late Babu Shyam Nandan Sahay to explain his ideas and seek their help to establish a Commerce College at Patna-the capital of Bihar. His herculean efforts bore fruit, and in 1949, he successfully launched his cherished institution, College of Commerce, at P.N. Anglo Sanskrit School Campus, Naya Tala, Patna in a rented house. Initially, only I. Com. programme was started with hardly a dozen of students and six faculty member. Later on, in 1953, Raja of Pali graciously donated lands to start the college at the place where it is today. The college was affiliated to Bihar University, Muzaffarpur a new university launched in 1952 in Bihar. In 1957, Science education was introduced in the college on the advice of the then Vice-Chancellor of Bihar University Muzaffarpur. Babu Shyam himself, followed by Arts faculty 1960 and Law in 1963.

DEPARTMENT OF B. Sc. (IT)

The Department of B.Sc.(IT), College of Commerce, Arts & Science started in the year 2009 under the Directorship of Dr. S. P. Sinha, Principal and Dr. Surendra Prasad Sinha Co-ordinator. The department is located in the Science building of the College on the first floor. The proposed expansion of the department will be at the second floor of the same building. There are more than 15 staff members in the department including around 10-12 teaching staff and 3 non-teaching staff members. The teaching staff includes professionals and highly qualified people from different subjects to conduct theory and practical classes of students. The department has a large number of sophisticated and advanced computer systems and also projection class room (smart class). The computer lab can accomodate a total number of 60 students.

OPPORTUNITIES

The course, which is designed by team of experts, will make a student well versed in Computer Technologies so that he could get a job in any sector, industry. For students who want to pursue further studies, the course will help them build a solid platform.

ELIGIBILITY FOR ADMISSION

Minimum 45% Marks in 10+2 or Intermediate in Science (Phy, Chem, Math)

RESERVATION

The department/college allows reservation as per the rules of the State Government in the seats allotted to the institution by the university. In case, the department / college doesn't get sufficient number of candidates under the reserved category within the specified time, the seats will be offered to the general candidates, with a notice to Dean Social Welfare, Patliputra University, Patna.

MEDIUM OF INSTRUCTION

The medium of instructions will be English & Hindi, but emphasis will be on English. The institute will provide regular workshops to improve English of enrolled students.

Documents required for admission in Patliputra University`s regular courses :

- Photocopy of Provisional Certificate (Date of Birth) of Class X.
- Photocopy of Marks Sheets of Class X.
- Photocopy of 10+2 or Intermediate Passing Certificate.
- Original Mark Sheet of 10+2 or Intermediate.
- Original College Leaving Certificate or School Leaving Certificate.
- Original Migration Certificate (Not for Intermediate Council Students)
- Cast Certificate - if belongs to SC or ST or OBC.
- Passport Size Photographs - 5 Nos.

Note : All the photocopies of submitted documents have to be attested by a Gazetted Officer/Notary.

ATTENDANCE COMPULSORY

Each & every student of regular course must register minimum 75% attendance in classes. No student with less than 75% attendance will be allowed to write/appear in university Examinations, as per rules.

FEE

Rs. 15,000/- Per Year without examination and registration fee.

FEE PAYMENTS

All payments will be made in cash or through Bank Draft in favour of **"C.O.C.A.S. Vocational Courses Fund A/C"** payable at Patna. Any payments, made under any head, will neither be refundable nor be transferable under any circumstances. Any Registration or Examination form shall NOT be forwarded/accepted from the candidate with having dues in the head of fee or anything else.

The College may reject any application without assigning any reason. The decision of the College will be final in all matters. The Courses and Examination may be conducted on semester or annual system, as decided by the University. The University is the final authority to decide all the issues pertaining to Examination. The College will not be responsible for any type of delay in examination, result declaration, change of centre or any other activity, pertaining to the discretion of the University. The place and time of classes may change in the cases situations beyond control. In such circumstances, re-scheduling of classes and other academic activities are quite possible. A student is not allowed to join any other regular course in any other University, while doing B.Sc.(IT) from this college.

The fee must be paid on the due dates announced by the college. A defaulting student will have to pay late fine, as and when decided by the college authorities. In case of request for late payment, that too before the due date. No request for extra time for payment will be entertained after the due date.

At least 75% attendance is essential for appearing in the University Examinations. No student below 75% attendance will be allowed to appear in examinations. In case a student discontinues in between the course, he/she has to obtain No. Dues Certificate from the office, by paying the dues. No documents will be released to any students with any type of dues with the college.

The College will not be responsible for any postal delay or missing in any case. It is students responsibility to be familiar with the rules & regulations to the College and the University. In case of any dispute, ignorance of regulations can not be used as an excuse in any case.

LIBRARY

The College provides facilities of Library to each & every student. The student will pay a One Time Non Refundable Library fee of Rs. 500/- (Rupees five hundred only) and avail Library Membership till the end of his course.

TEAMWORK & PROJECT ASSIGNMENTS

Being professional degree course, the students will be assigned different topics related to their subjects which they will have to do as team-work or project assignment.

GUEST LECTURES, SEMINARS & VIDEO SHOWS

The department/college will invite industry leaders and experts to deliver lectures time to time. This would give the students a chance to listen and share the practical experiences of experts. The department/college will arrange educational seminars, in which the participation of experts and the students will be actively invited. The department/college has a wide range of educational video cassettes & CDs. These cassettes will be displayed in order to develop the knowledge level of enrolled students. The schedule of the show will be placed time to time on the notice board.

EXAMINATIONS AND FINAL RESULTS

For Regular programmes, Patliputra University, Patna is the sole authority to conduct Examinations. The college as well as the student will follow the rules & regulations, schedule and other informations given by the University.

INTERACTION WITH THE INDUSTRY AND SEMINAR

In each semester / year working professional from the Industry will share their thought and experience with the students to make them understand the needs and practices followed in the industry.

Seminars for each student will be conducted at the end of the year to develop the communication skills.

CANCELLATION & REFUND

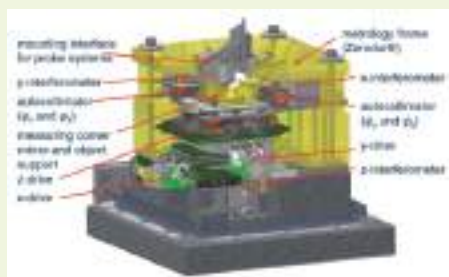
No refund will be made once the fee is deposited by the student admitted to the B.Sc. (IT)

FACULTIES

The service of the following faculties/Guest faculties are availed by the department to provide excellent education in the field of IT.

GUEST

K. K. Sinha	Director, Postal Service
Dr. Prabhat Kumar	NIT, Patna
Dr. P. K. Verma	Principal, R.K.D. College, Patna
Dr. Lalan Singh	Retd. Prof. and Head, Physics Deptt., A.N. College, Patna



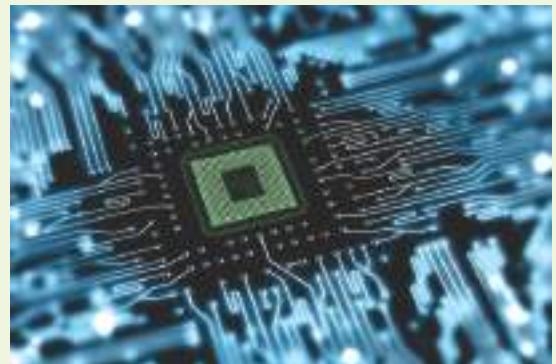
PAPER-1

SECTION-A (FUNDAMENTALS OF INFORMATION TECHNOLOGY) UNIT - I (HARDWARE)

- Brief History of development of Computers.
- Computer system concepts : Features & Limitations.
- Basic components of Computer Hardware, CPU. Memory Unit & I/O Unit.
- CPU Organization - CU, ALU, Registers.
- Memory organisation - RAM, ROM, EPROM, PROM, Cache Memory.
- I/O Organisation-VDU, Keyboard, Mouse and secondary I/O Devices.
- Mass Storage Organisation - Magnetic Tape, Magnetic Disk, CD, DVD, Flash Storage Devices.
- Data Representation - Number systems - Binary, Decimal, Octal. 2's Complement. ASCII & EBCDIC Codes.

UNIT - II (INTRODUCTION TO SOFTWARE)

- Types of Software
- System Softwares
 - Operating Systems
 - Command interpreters
 - Translator-Assemblers, Compilers, Interpreters.
- Types of Operating Systems
 - Batch Processing
 - Single Process Monitors
 - Multiprogramming -Real time
 - Online
 - Multiprocessing
- Programming Languages
 - Machine Language
 - Assembly Language
 - High Level Languages
- Application packages
 - Word Processors
 - Spread Sheet
 - Presentations
 - Other utilities
- Computer viruses – Working & spread of viruses, Types, Control of viruses
- Communication & Transmission
- Analog & Digital signals
- Modulation - Demodulation (MODEM)
- Transmission Mode – Simplex, Half Duplex, Duplex
- Line Configuration – Point to Point
 - Multipoint
- Definition of computer networks
- Types-LAN, WAN & MAN
- Topologies
- Communication Protocols



REFERENCES

- COMPUTERS TODAY - by S. K. Basandra, Galgotia Publication
- FUNDAMENTAL OF INFORMATION TECHNOLOGY - by Alexis Leon & Mathews Leon, Vikas Publishing House, New Delhi.
- COMPUTER FUNDAMENTALS - by P. K. Sinha - BPB Publications

SECTION - B (STRUCTURED PROGRAMMING USING 'C' LANGUAGE)

UNIT -1 (PROGRAMMING CONCEPTS)

- Programs & Program Development
- Flowcharts
- Pseudo codes
- Programming Technique.
 - Structured Programming
 - Top-down approach
 - Bottom-up approach
 - Object oriented programming

UNIT -11 ('C' PROGRAMMING LANGUAGE)

- Overview-History & Features
- Structure of a 'C' Programme
- Variables, Expressions, Identifiers, Keywords, Data types & Constants operators-
Arithmetical, Logical, relational, Conditional & Bitwise.
- Operators Precedence & Associativity
- 'C' -I/O -Character Based & Formatted
- 'C' Control Statements
 - Decision Control - If, If - else, nested If - else
 - Loops / Iteration - while, do-while, for -loops
 - Break/continue/go to statements
- Arrays
 - Single & Multi Dimensional
- Strings
- Functions
 - Call by Value & Call by Reference
- Introduction to pointers
- Recursion
- Structure & Unions
- C-Files

REFERENCES

- PROGRAMMING IN 'C' - by E. Balaguruswamy, TMH Publications
- PROGRAMMING WITH 'C' - by Gottfried, Schaums series, TMH Publications
- 01 LEVEL PROGRAMMING CONCEPTS 7 SYSTEMS - by V.K. Jain, BPB Publications
- 'C' COMPLETE REFERENCE - by Herbert C, TMH Publications



SECTION - C (INTRODUCTION TO IBM ARCHITECTURES)

- Microprocessors & Microprocess or Families
- Personal computers - IBM & Appleseries
- IBM PC Characteristics - PC/PCAT/PCXT
- 8086 Architecture
- DMA Controller & Configuration
- VGA Controller
- Arithmetic Co-processor
- Clocks



REFERENCES

- IBM;-C - by Peter Norton
- COMPUTER ORGANISATION & ARCHITECTURE - by William Stallings, TMH Publications

PAPER - II

Section - A (DATA BASE MANAGEMENT SYSTEMS)

UNIT-I(DBMS BASICS)

- DBMS vs Files
- Organisation of DBMS
- Three Views & Schemes of DBMS
- DOL, DML, Queries, SQL
- Types of DBMS-Relational, Hierarchical & Network
- E-R Diagrams
- Generalisation, specialisation, aggregation



UNIT -II (RDBMS)

- Relation-Definition, Functional Dependency Domain, Attributes, Tuples, Fields
- Keys - Candidate Key, Primary Key, foreign Key
- Codd's Rules
- Normalisation upto BCNF
- Example RDBMS-ORACLE (Practical Classes)



REFERENCES

- DATA BASE SYSTEM CONCEPT - by Korth & Silberschatz
- AN INTRODUCTION TO DATABASE SYSTEM - by Bipin Desai
- DATA BASE MANAGEMENT SYSTEM - by Leon & Leon, Vikas Publications
- AN INTRODUCTION TO DATA BASE SYSTEM - by C.J. Date

Section-B (OPERATING SYSTEM CONCEPTS)

UNIT-I (OS BASICS)

- Definition of OS
- Functions of OS
- Types of OS

UNIT-II (PROCESS MANAGEMENT)

- Process Definition
- PCB, Process States
- Scheduling-Algorithms & Types
- FCFS, SJF, Round Robin
- LTS, STS, MTS
- Preemptive & Non-Preemptive Scheduling
- Deadlocks - Avoidance, Detection & Recovery
- Interprocess Synchronisation - Semaphores & Mutual exclusion



UNIT -III (MEMORY MANAGEMENT)

- Fixed & Dynamic Partitions
- Compaction
- Paging
- Segmentation
- Virtual memory, Page Replacement Algorithms

UNIT-IV (DEVICE MANAGEMENT)

- Overview - Types of I/O - Serial & Block I/O
- Programmed I/O
- Interrupt Driven I/O
- DMA
- Polling, Daisy-Chaining, Multiple Interrupt lines
- Device Drivers & Device Controllers, BIOS, IS < Device Independent Software

UNIT-V (FILE MANAGEMENT)

- Blocks, Sectors, Clusters, Directories
- Files-Concepts & Definitions
- Types of files & Organisation
- Disk Free Space Management
- Disk Free Space Allocation
- Disk Scheduling

UNIT-VI (DISK OPERATING SYSTEM (DOS))

- History & Versions
- Booting-FAT, Directory Structure
- DOS System Files
- DOS Commands - Internal & External
- DOS - Batch Files

REFERENCES :

- OPERATING SYSTEM CONCEPT - by Galwin & Stlberschatz
- OPERATING SYSTEMS - by Tenanbaum
- OPERATING SYSTEMS - by Dietel



SECTION -C (BASIC ELECTRONICS - I)

UNIT - I

- Types of resistance, Resistance symbol, Color code, capacitors, Capacitor's symbol, Code types, Mica & paper capacitor. Inductance, Conductor, Insulator, Band Theory, Intrinsic & extrinsic semiconductors, Theory of p-n Junction, Capacitance & Diffusion capacitance.

UNIT - II

- Zener diode, Tunnel diode, Varactor diode, Power diode, photo diode, LED, LCD, Point contact, diode. Schottky diode, Halfwave & fullwave rectifier with & without filter.

UNIT - III

- BJT characteristics, CE, CB, CC configurations, FET metal oxide, Semiconductors (MOSFET). CMOS, Unijunction transistor & Photo transistor.

UNIT - IV

- Single stage RC coupled amplifier frequency response class A, Class B, Class AB, Class C, Push pull amplifier, Efficiency distortion in amplifier their merits & demerits, BJT & FET RC coupled amplifiers.

UNIT - V

- Switching Characteristic BJT & FET, Monostable & Astable Multivibrators, RC integrators & differentiators, Clipper & Clamper circuit.

REFERENCE

- BASIC ELECTRONICS - by B.L.Thareja
- BASIC ELECTRONICS - by A.K. Sahani
- BASIC ELECTRONICS - by V.K. Mehta

II ND YEAR PAPER - 1ST

SECTION - A DATA STRUCTURE

- Dynamic Memory Allocation - Malloc (), Alloc ().
- Analysis of Algorithms.
- Arrays - Searching, Sorting, Insertion, Deletion, Merging.
- String, Manipulation.
- Linked Lists - Single & Double, Operations.
- Sparse Matrices, Operations.
- Stacks - Operations, Infix, Prefix & Postfix Notations.
- Queues - Operations, Circular & Deque.
- Trees - BS Tree, AVL - Tree, B - Tree, Heap Searching & Sorting Techniques.
- Graphs - Adjacency, DPS, BFS, Minimum Spanning Tree, Dijkstra & Kruskals Algorithms.

SECTION - B DISCRETE MATHEMATICS

Unit-I Boolean Algebra

- Introduction to Boolean Algebra
- Basic Postulates
- Canonical Forms - Sum of Products & Product of Sums.
- Karnaugh Maps
- Simplification Using Karnaugh Maps.

Unit-II Circuit Design

- Introduction to Digital Logic
- Gates - Inverters, AND, OR, XOR, UNIVERSAL NAND GATE, UNIVERSAL NOR GATE, TRUTH TABLES AND LOGIC DIAGRAMS.
- Basic Circuits - Adders, Decoders, Encoder, Multiplexers, Flip-Flops etc.

SECTION - C UNIT-I/LINUX

- Basic Features, Advantages, Basic, Architecture of Unix / Linux System, Kernel, Shell.
- Linux File System - Boot Block, Super Block, Inode Table, Data Blocks, How Linux access files, storage files, Linux standard, directories, Commands for files and directories cd, ls, Cp, md, rm, mkdir, rmdir, more, less, creating and viewing files, using cat, checking disk free spaces, Linux system startup and shut-down process.



UNIT - II/LINUX

- Understanding shells, Processes in linux, connecting processes with pipes, Redirecting input, output, Background processing, managing multiple processes, changing process priority, scheduling of processing at command, batch commands, kill, ps, who, sleep, Printing commands, find, sort, Cal, Banner, touch, file, file related commands - ws, sat, cut, grep, dd, Mathematical Commands - be, expr, factor, units.
- Basic Features, Advantages, Basic, Architecture of unix / Linux system, Kernel, Shell.
- Linux File System - Block, Super Block, Inode Table, Date Blocks, How Linux access files, storage files, Linux standard, directories, Commands for files and directories cd, ls, Cp, md, rm, mkdir, rmdir, more, less, creating and viewing files, using cat, checking disk free spaces, Linux system startup and shut-down process.

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- Understanding shells, Processes in linux, connecting processes with pipes, Redirecting input, output, Background processing, managing multiple processes, changing process priority, scheduling of processing at command, batch commands, kill, ps, who, sleep, Printing commands, find, sort, Cal, Banner, touch, file, file related commands - ws, sat, cut, grep, dd, Mathematical Commands - be, expr, factor, units

II ND YEAR

PAPER - II ND

SECTION - A OBJECT ORIENTED PROGRAMMING USING C++

Unit - I OOps Basics

- | | | | |
|---------------|-----------|----------------|---------------|
| ● Objects, | ● Classes | ● Polymorphism | ● Reusability |
| ● Inheritance | ● Message | ● Passing | ● Genericity |

Unit - II C++ Programming Language

- History & Features, introduction of classes, Comparison / Additional Features to C-Language.
- Object oriented features in c++
- Scope Resolution Operator
- Static Data Member
- Static Function
- Passing object of function
- Returning objects
- Constructors & Destructors
- Function overloading In C++, Operator Overloading in C++
- Inline Function, Friend Function
- Inheritance - Single, Multiple, Multilevel Virtual Functions
- Void Pointers
- Pure Virtual Functions
- Function Templates & Class Templates.



SECTION - B COMPUTER NETWORKING & INTERNET

UNIT - I

- Need & Advantages of Networks, Types : Server based, Peer based, Hybrid.
- Topology, Network media types, H/w protocol, Software protocol, digital signaling, analog signaling, bit synchronization, base band and broad band transmission.

UNIT - II

- OSI and IEEE 802 Model, IEEE 802.3, IEEE 802.4 IEEE 802.5 & Fast Ethernet FDDI, ATM, LAN access techniques, Bit map protocol.

Unit - III

- Connectivity, Hubs, Repeaters, Bridges, Multiplexers, Router, Gateways, Modem, Types of Modem, Modulation Schemes,

Unit - IV

- Internet V/s Intranet, growth of Internet, ISP, Connectivity, Dial up, Leased line, URL, Domain name Portals Application, POP & Web based e-mail, merits, IP addressing.
- Basics of sending & receiving e-Mails.

Unit - V

- Internet Chatting, WWW, HTTP, URL, HTML.
- Overview of e-commerce, Internet, e-business, Advantage of e-commerce.

PAPER -II ND

Section-C DIGITAL COMPUTER ORGANISATION

Unit - I

- **CPU ORGANIZATION** : ALU & Control Circuit. Idea about Arithmetic, Circuits, Program control, Instruction Sequencing.

Unit - II

- **INPUT-OUTPUT ORGANIZATIONS** : I/O Interface, Properties of simple I/O devices and their controller, isolated Versus memory-mapped, I/O, Modes of Data transfer, Synchronous & Asynchronous Data transfer, Handshaking, Asynchronous serial transfer, I/O Processor.

Unit - III

- **MEMORY ORGANIZATION** : Memory Hierarchy, Auxiliary memory, Magnetic drum, Disk & Tape, Semi-conductor, memories, Associative, memory, virtual Memory, Address Space & Memory space, Address mapping, Page table, Page Replacement, Cache memory, Hit Ratio, Various mapping techniques, writing into Cache access.

3rd YEAR

PAPER-1

SECTION -A : JAVA PROGRAMMING

Unit - I :

- C++ Vs Java, Java and Internet and WWW, Java support systems, Java environment, Java Program Structure, Tokens, Statements, Java Virtual machine, Expressions & its Evaluation, Data Types; Type Casting, Operators : Expressions & its Evaluation, Decision making and branching, Loops, Jumps in Loops, Labeled Loops.

Unit - II :

- Defining a class, Adding variables and method, Creating objects, Assessing class members, Constructors, Method overloading, Static members, Nesting of methods, Inheritance : Extending a class, Overriding methods, Final variables and methods, Final classes, Finalizer methods, Abstract method and classes, Visibility control.

Unit - III :

- Arrays, One dimensional & two dimensional Strings, Vectors, Wrapper classes, Defining interfaces, Extending interfaces, Implementing interfaces, Accessing interface Variables, System packages, Using System packages, Naming Conventions, -Creating packages, Accessing a packages, Using package, Adding a class to a package, Hiding classes.

Unit - IV :

- Threads, Creating threads, Extending the threads class, Stopping and blocking a thread, Life cycle of a thread, Using thread methods, Thread exceptions, Thread priority, Synchronization, Implementing the runnable interface.

Unit-V :

- Applets, Local and remote applets, Appletsvs applications, Writing applets, Applets life cycle, Creating an executable applet, Designing a web page, Appletage, Adding applet to HTML file, Running the applet, Passing parameters to applets, Aligning the display, HTML tags & applets, Getting input from the user.

PAPER - I

SECTION - B : Internet and Web Designing

Unit-I :

- **Introduction to Internet Applications** :- Introduction to internet, WWW, News group. E-mail Messaging Protocols, Internet Protocols (HTTP, FTP, TFTP, DNS, SMTP, IMAP, POP and TCP/IP), Setting up Internet connection using Dial-up and leased-line (Broadband). Creating E-mail Sending mails. Attachments, using FTP Services.

Unit-II :

- **Web Page Designing** :- Using different browsers. (Internet Explorer/Netscape Navigator) Browsing internet and E-mail service providers, Features of internet Services (Chatting, Conferencing), MIRC, HTML & DHTML: HTML Tags, Designing Tables, Frames, and Forms, Placing images, animation and Sound on Sites, Using Hit Counter. Adding VB Script code to html pages, Scripting Functions. Using Front Page 2002 Hosting your website using The Free hosting Sites like yahoo, Angel fire, etc.

Unit-III :

- Server side programming using ASP :- Asp objects, DOM, Database accessing on web, Using Forms for perform Query in Databases.

SECTION - C : INTRODUCTION TO NETWORK SECURITY

Unit-I :

- **Introduction** :- Networking Terminologies, Active vs passive Attacks, Viruses, Worms, Trojan Horse. The Multi Level Model of Security, Legal issues. Introduction, Breaking an Encryption Scheme, Types of Cryptographic Functions-Secret Key, Public Key and Hash Algorithms. Data Encryption Standards, International Data. Encryption algorithm, Advanced Encryption Standard, RC4 Modes of Operation, encrypting a large message, Generating MACs, Multiple Encryption DES. Public Key Algorithm, Modular Arithmetic, RSA, Diffie-Hellman, Digital Signature Standard.

Unit-II :

- **Authentication** : Password based, Address based, Cryptographic authentication protocols, Eavesdropping and Server Database reading, Trusted Intermediaries, Session Key, Authentication of People Security Handshake pitfalls. Electronic Mail Security, PGP (Pretty Good Privacy). Firewalls, Web Issues.

PAPER-II

SECTION - A : VISUAL PROGRAMMING WITH VISUAL BASIC

Unit-I :

- **Visual programming** :- The Fundamental of visual Basic, Introduction, VB Editions, Working with visual Basic, IDE, The elements of the user-Interface, Designing the user Interface, Programming an application, Visual Development and Event-Driven Programming, Customizing the environment.
- **Visual Basic the Language** :- Visual basic projects, the project files, variables, constants, Arrays, collections, procedures, arguments, function returns values, control flow statements, looping statements, nested control structures, exit statement.
- **Working with forms** :- The appearance of the form, designing menus, building dynamic forms, drag and drop operations, mouse conflicts.

- **Basic Active X Controls** :- The textbox control, the list box and combo box controls, the scroll bar and slider controls, the file controls.
- **Advanced Active X controls** :- The Common dialogs control, using the common dialog control the tree view and List view controls, the rich text box control, the RTF language, the msflexgrid control.
- **Multiple Document Interface** :- MDI applications, parent and child MDI forms, Accessing child forms, Implementing scrolling forms.
- **Database Programming with VB** :- The Active date objects, data environment, sql, mshflexgrid control, ado, Dao, Library, Report designing using data report, Interfacing with MS-Access & Oracle database.

SECTION - B : SQL SERVER

Unit-I:

- **Introduction** :- SQL Server 2000 Relational Database Management System and conventional database systems. Installing SQL Server. Working with Enterprise Manager. Configuring a Database, Creating Tables, Views, Defining constraints, Creating relationships. Designing Database diagram. Creating Indexes. Creating user-defined data types, Creating Stored Procedures and Function.
- Working with Query Analyzer, Writing queries, Using relational operators like project, join, Intersect, union, difference. Built-in SQL functions. Performing data manipulation from query analyzer. Query optimization.
- Using OLE DB, ADO for interfacing with front-end applications designs in VB, Java etc.

SECTION - C : SYSTEM ANALYSIS & DESIGN

Unit-I:

- **SYSTEM CONCEPTS** :- The system concept, Characteristics of system, Elements of system, Types of system, man made information systems.
- **SYSTEM DEVELOPMENT LIFE CYCLE** :- Recognition of need, Feasibility study, Analysis, Design implementation, post implementation and maintenance system planning and control.
- **SYSTEM PLANNING AND INITIAL INVESTIGATION** :- Bases for planning system analysis, Determining users requirements and analysis, Fact finding, Determination of feasibility.
- **TOOLS OF STRUCTURED ANALYSIS** :- Logical and Physical Models, Data flow diagram, Data dictionary, System structured charts, System model, Pseudo codes, Decision tree, Decision tables, HIPO chart, Gantt charts, Warries diagram.
- **FEASIBILITY STUDY** :- System performance constraints, identification of system objective, feasibility analysis and report.
- **SYSTEM DESIGN** :- Stages of system design, Logical and physical design methods, From driven mythologies, IPO and HIPO charts, structured walk through, Audit considerations: Processing controls, Data validation, Audit trail and documentation control.

