

**DEPARTMENT OF COMPUTER SCIENCE
&
TECHNOLOGY**

Faculty Profile

1. **Name** Uma Bhattacharya
2. **Date of Birth** 6th January, 1957
3. **Educational Qualification** Ph.D. (Computer Science)
4. **Work Experience**
 - **Teaching** 19 years
 - **Research** 15 years
 - **Industry** --
 - **Other** --
5. **Area of Specializations** Interconnection Network, Fault-tolerance, Optical Communication
6. **Subjects teaching at Under Graduate Level** Compiler Construction,

Systems Engineering.

Post Graduate Level Language Processor, Computer Architecture, Systems Programming
7. **Research guidance**
 - Master's** 20
 - Ph.D. --** Awarded 1, Continuing 2.
 - No. of papers published in**
 - National Journals -** Nil
 - International Journals -** 5
 - Conferences -** 20
8. **Projects Carried out** 3
 - i. AICTE sponsored (under R&D), 1999
 - ii. DST- Royal Society sponsored UK-India Networking 2005
 - iii. Commonwealth sponsored program 2002-2003
9. **Patents** Nil
10. **Technology Transfer** Nil
11. **Research Publications** 25
12. **No. of Books published with details** Nil

1. Name **SIPRA DASBIT**
2. Date of Birth **04.01.1963**
3. Educational Qualification **Ph.D.**
4. Work Experience
 - Teaching **18 years**
 - Research **16 years**
 - Industry **1.5 years**
 - Other
5. Area of Specializations **Mobile Computing, DBMS, Interconnection Network**
6. Subjects teaching at Under Graduate Level **DBMS, Data Structure, Business Data Processing and object orientation, Digital Logic**
 Post Graduate Level **DBMS, Mobile Computing**
7. Research guidance
 - Master's **15**
 - Ph.D. **Awarded – 1, Continuing - 2**
 - No. of papers published in
 - National Journals **2**
 - International Journals **3**
 - Conferences **22**
8. Projects Carried out **3**
 - iv. **AICTE sponsored (under R&D),2000**
 - v. **AICTE sponsored (under Career Award for Young Teachers scheme), 2001**
 - vi. **NORTEL, USA sponsored,1998**
Co-coordinated
9. Patents **Nil**
10. Technology Transfer **Nil**
11. Research Publications **27**
12. No. of Books published with details **Book Chapter**
 - Book Name – **Handbook of Research in Mobile Business**
 - Chapter Name – **Load Balancing as a key to Enable Different Services in a Cellular Network**
 - Co-author -- **S. Mitra**
 - Vol – **1**
 - pp – **297-307**
 - ISBN – **1-59140-817-2**
 - Year – **2006**
 - Publisher – **Idea Group Inc, Pennsylvania, USA**

SIGNATURE

1. Name Biplab Kumar Sikdar
2. Date of Birth 03.01.1965
3. Educational Qualification M. Tech, PhD

4. Work Experience

- Teaching 15 years
- Research Nil
- Industry Nil
- Other Nil

5. Area of Specializations: VLSI Design & Test

6. Subjects teaching at Under Graduate Level: Computer org & architecture,

Operating systems, Compiler,
Digital Logic and Network

Post Graduate Level: Computer architecture and Operating systems

7. Research guidance

Master's 08

Ph.D. Continuing - 2

No. of papers published in

- National Journals 0
- International Journals 10
- Conferences 43

8. Projects Carried out 3

- vii. AICTE sponsored (under R&D), 2000
- viii. AICTE sponsored (under TAPTEC, 2002
- ix. FUJITSU, INTEL, USA sponsored, 1998
Coordinated

9. Patents 1 (applied for)

10. Technology Transfer Nil

11. Research Publications 53

12. No. of Books published with details: Nil

1. Name **ABHIK MUKHERJEE**
2. Date of Birth **12.08.1968**
3. Educational Qualification: **PhD, Computer Science**
4. Work Experience
 - Teaching **7 years**
 - Research **3 years**
 - Industry **2 years**
 - Other
5. Area of Specializations **Control Systems**
6. Subjects teaching at Under Graduate Level **Analysis and design of algorithms, Computer Control of Industrial Processes**
 Post Graduate Level **Information and coding theory**
7. Research guidance
 - Master's **4**
 - Ph.D. **Nil**

	No. of papers published in	
-	National Journals	-
-	International Journals	7
-	Conferences	16
8. Projects Carried out **3**
9. Patents **Nil**
10. Technology Transfer **Nil**
11. Research Publications **23**
12. No. of Books published with details: **Nil**

1. Name Asit Kumar Das
2. Date of Birth 06.01.1972
3. Educational Qualification M. Tech.

4. Work Experience

- Teaching 6 years
- Research Nil
- Industry 3 years and 6 months
- Other Nil

5. Area of Specializations: Data Warehouses & Data Mining

6. Subjects teaching at Under Graduate Level: RDBMS, Operating Systems, Introduction to Computing, Formal Language and Automata.
Post Graduate Level: Nil

7. Research guidance

Master's 01(continuing)

Ph.D. - Nil

- No. of papers published in

- National Journals 0

- International Journals 0

- Conferences 2

8. Projects Carried out Nil

9. Patents Nil

10. Technology Transfer Nil

11. Research Publications 2

12. No. of Books published with details: Nil

1. Name Dhurjati Mohan Kar.
2. Date of Birth 18.04.1950.
3. Educational Qualification M. E..

4. Work Experience
 - Teaching 24 years
 - Research Nil
 - Industry 7 years
 - Other ---
 -
5. Area of Specializations: Software Engineering,
Management Information Systems.
6. Subjects teaching at Under Graduate Level: Analysis & Design of
Information Systems,
Software Engineering.
Post Graduate Level: Software Engineering, Management Information
System.

7. Research guidance
 - Master's 22
 - Ph.D. - Nil
 - No. of papers published in
 - National Journals
 - International Journals
 - Conferences

8. Projects Carried out - 14(approx)
9. Patents Nil
10. Technology Transfer Nil

11. Research Publications

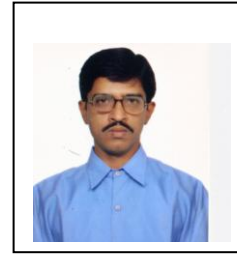
12. No. of Books published with details: Nil

1. Name Somnath Pal
2. Date of Birth 01.07.1958
3. Educational Qualification M. E..
4. Work Experience
 - Teaching 20 years
 - Research Nil
 - Industry 1 year 6 months
 - Other 1 year
5. Area of Specializations: Machine Learning & Data Mining
6. Subjects teaching at Under Graduate Level: Data Structures and Algorithms, Symbolic Logic and Artificial Intelligence.
Post Graduate Level: Symbolic Logic and Logic Programing, Operating Systems
7. Research guidance
 - Master's 22
 - Ph.D. - Nil
 - No. of papers published in
 - National Journals 0
 - International Journals 6
 - Conferences 14
8. Projects Carried out - 1
9. Patents Nil
10. Technology Transfer Nil
11. Research Publications 20
12. No. of Books published with details: Nil

1. Name Sulata Mitra
2. Date of Birth 07.12.1963
3. Educational Qualification M. Tech, PhD
4. Work Experience
 - Teaching 15 years
 - Research 2 years
 - Industry 3 years
 - Other Nil
5. Area of Specializations: Mobile Computing
6. Subjects teaching at Under Graduate Level: Computer org & architecture, Hardware Description language, Digital Logic and Network
 Post Graduate Level: Computer architecture, Microprocessor, Computer Network
7. Research guidance
 - Master's 08
 - Ph.D. Nil

	No. of papers published in
- National Journals	1
- International Journals	2
- Conferences	10
8. Projects Carried out Nil
9. Patents Nil
10. Technology Transfer Nil
11. Research Publications 13
12. No. of books published in detail: Nil

1. Name : Sekhar Mandal
2. Date of Birth: 02-12-1966
3. Educational Qualification: M.Tech
4. Work Experience
 - Teaching : 6 years
 - Research : 3 years
 - Industry : 5 years
 - Other



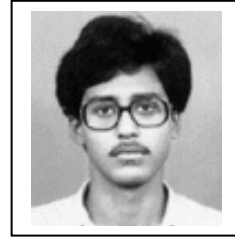
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5. Area of Specializations : VLSI design, DBMS, Image Processing
6. Subjects teaching at Under Graduate Level: Digital logic, DBMS, VLSI, Introduction to Computing.
Post Graduate Level: VLSI Design.
7. Research guidance: NIL

Master's	No. of papers published in
Ph.D.	- National Journals
	- International Journals: 01
	- Conferences: 12

8. Projects Carried out: 01
9. Patents: Nil
10. Technology Transfer: Nil
11. Research Publications
12. No. of Books published with details: Nil

1. Name : **Manas Hira**
2. Date of Birth : **01.07.1967**
3. Educational Qualification: **M Tech**
4. Work Experience
 - Teaching : **11 yrs**
 - Research : **5 yrs**
 - Industry : **1 yr**
 - Other



5. Area of Specializations : **Circuit Verification**

6. Subjects teaching at Under Graduate Level:

1. **Operating systems**
2. **Computer Networks & Distributed Systems**
3. **Theory of Computation**
4. **Introduction to Computing**
1. **Principles of Programming Languages**

- Post Graduate Level
7. Research guidance

Master's- 5
Ph.D.-

No. of papers published in

- National Journals
- International Journals – **1**
- Conferences

8. Projects Carried out: **DRDO Sponsored Projects - 3 Nos**
9. Patents:
10. Technology Transfer
11. Research Publications
12. No. of Books published with details

1. Name Sri Apurba sarkar
2. Date of Birth 31/12/1976
3. Educational Qualification B.Tech. Computer Sc. & Tech.
M.Tech. Computer Sc. & Tech.
4. Work Experience
 - Teaching 3 Years
 - Research Nil
 - Industry Nil
 - Other Nil
5. Area of Specializations Pattern Recognition.

6. Subjects teaching at Under Graduate Level

Theory:

- a. Introduction to Computing,
- b. Object Oriented Programming,
- c. Web Technology.

Lab

- a. Introduction to Computing,
- b. OOP(C++, Java)
- c. Operating System,
- d. Computer Graphics.

Post Graduate Level

Theory:

- a. Data structure & Algorithm

Lab:

- a. Introduction to Computing,
- b. OOP(C++, Java)
- c. Computer Graphics.

7. Research guidance

M.Tech: One (Signature Verification System)

Status: Ongoing.

No. of papers published in

- National Journals : Nil
- International Journals : Nil
- Conferences : Nil

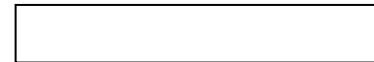
8. Projects Carried out Nil
9. Patents Nil
10. Technology Transfer Nil
11. Research Publications Nil
12. No. of Books published with details Nil

SIGNATURE



1. Name: Amit Kumar Das
2. Date of Birth: 17 November 1957
3. Educational Qualification: Ph D in Engg.
4. Work Experience
 - Teaching: 22
 - Research: 14
 - Industry: Nil
 - Others

5. Area of Specializations: Document Image Processing



6. Subjects teaching at Under Graduate Level
 - i) Microprocessor ii) Systems Programming

Post Graduate Level

- i) Organisation & Assembly language

7. Research guidance
 - i) Document Image Processing ii) Content Based Image Retrieval

Master's: 15
Ph.D.: Nil

No. of papers published in

- National Journals : 5
- International Journals : 08
- Conferences: 29

8. Projects Carried out: CBIR
9. Patents: 1 (applied for)
10. Technology Transfer: None
11. Research Publications; See 7
12. No. of Books published with details: Nil

For each Faculty give a page covering

1. Name: JAYA SIL
2. Date of Birth: 2ND Dec, 1963
3. Educational Qualification: Ph.D.
4. Work Experience
 - Teaching: 18 years
 - Research: 2 years
 - Industry
 - Other: Post Doctoral Research
5. Area of Specializations: Soft Computing, Image processing



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6. Subjects teaching at Under Graduate Level:
 - i) Digital Logic
 - ii) Introduction to Computer Organization
 - iii) Computer Architecture & Peripheral Devices
 - iv) Artificial Intelligence & Expert systems
 - v) Microprocessor
 - vi) Business Information Processing and Object Oriented programming

7. Post Graduate Level
 - i) AI & logic programming
 - ii) Sequential machine & finite automata
 - iii) Object oriented programming
 - iv) Computer Graphics
 - v) Principle of programming languages
 - vi) Image Processing
 - vii) Soft Computing techniques
 - viii) Fuzzy Systems

8. Research guidance

Master's: 15

Ph.D.: 1, Intelligent Hybrid Control System for Grinding Operation (awarded).

: 5 in progress.

No. of papers published in

- National Journals: 3
- International Journals: 6
- Conferences: 25

9. Projects Carried out: 2

10. Patents: Nil

11. Technology Transfer: Ni

12. Research Publications: Nil

13. No. of Books published with details: Nil

LABORATORY :

1. Software Lab: Introduction to Computing, Data Structure, Discrete Structure, OOP, OS, DBMS, System Prog., SW Engineering, Compiler Design, Symbolic Logic & AI, Computer Network, Computer Graphics.

List of major Equipment/ Facilities:

a) Servers: 15 Nos.

1. CPU: CISC, RISC (Compaq, IBM, Digital, Sun, SGI)
2. RAM: Min 512 MB to Max 12 GB
3. HDD: approximately 2 terabytes (considering local HDD's of the servers and SAN) providing unified access to all the servers and clients
4. Peripherals: Monitor (17"/19"/21"), Keyboard, Mouse, CD, DVD, Tape drives, etc.

b) Clients: 110 Nos.

1. CPU: Pentium III/IV (Compaq, IBM, HP)
2. RAM: Min 128 MB to Max 1 GB
3. HDD: 40/80 GB
5. Peripherals: Monitor (CRT/TFT 17"/19"/21"), Keyboard, Mouse, CD, DVD drives, etc.

c) Mobile Nodes (Laptops): 20 Nos.

1. CPU: Pentium IV (IBM)
2. RAM: 1GB
3. HDD: 40/80 GB
4. Peripherals: Monitor (TFT 15"), CD/DVD Drive

d) Operating System: Digital Unix, Linux (Suse, Redhat, Fedora), Windows NT, 2000, XP

e) Compilers: Fortran, C, C++, Java, Lisp, Prolog

f) DBMS: Oracle, PostgreSQL, MySQL

g) Application Packages: Matlab, Rational Rose, Spice, all open-source Developments

f) Network Processor Evaluation Kit: IXP 1200 EB – 4 Nos

List of Experimental Setup:

All Experiments are related to the subject concerned.

Computing facilities :

Number and Configuration of Systems: Mentioned above under list of major Equipment.

Total number of systems connected by LAN :

All computing Systems are connected in LAN.

Total number of systems connected by WAN :

All computing Systems are connected in WAN.

Internet bandwidth: 512 kbps (raw)

Major software packages available: Mentioned above under list of major Equipment.

Special purpose facilities available: Mentioned above under list of major

Equipment.

2. Hardware Lab: Digital Logic, Comp.Org, μ p Based System Design, Digital System, Design Implementation, Process Control, VLSI.

List of major Equipment/ Facilities:

μ p Kits, Networking, FPGA Kits, EPROM Programming, CRO, Chip Tester, Function Generator, Pulse Generator, Power Supply.

List of Experimental Setup:

All Experiments are related to the subject concerned.

**MASTER OF COMPUTER APPLICATIONS (MCA)
PROGRAMMES in Dept. of Computer Science & Technology**

- i. Title of the programme : Master in Computer Application (MCA)**
- ii. Curricula and Syllabi**

SEMESTERWISE STRUCTURE FOR MCA COURSE (Provisional)

1st semester

Code	Subject	L	T	S	Marks
CS/MCA 101	Programming Concepts	3	1		100
CS/MCA 102	Digital Logic & Computer Organization	3	1		100
CS/MCA 103	Discrete Structures	3	1		100
HU/MCA 104	Managerial Economics	3	1		100
M /MCA 105	Numerical Analysis & Optimization	3	1		100
CS/MCA 106	Digital Logic Lab			4	100
CS/MCA 107	Programming Lab			4	100
CS/MCA 108	Numerical Analysis Lab			4	100
Total		15	5	12	800

2nd semester

Code	Subject	L	T	S	Marks
CS/MCA 201	Data Structure & Algorithms	3	1		100
CS/MCA 202	Computer Architecture and Micro Processors	3	1		100
CS/MCA 203	Information Processing & Object Orientation	3	1		100
HU/MCA 204	Sociology of Info. and Comm. Technology	3	1		100
M /MCA 205	Probability & Queuing Theory	3	1		100
CS/MCA 206	Object Orientation & Info. Processing Lab			4	100

CS/MCA 207	Data Structure & Algorithm Lab			4	100
CS/MCA 208	Microprocessor Lab			4	100
Total		15	5	12	800

3rd semester

Code	Subject	L	T	S	Marks
CS/MCA 301	Data Base Management Systems	3	1		100
CS/MCA 302	Design and Analysis of Algorithms	3	1		100
CS/MCA 303	Operating Systems & System Software	3	1		100
CS/MCA 304	Information System Analysis and Design	3	1		100
XX/MCA 305	Elective I (Math / Hum)	3	0		100
CS/MCA 306	DBMS Lab			4	100
CS/MCA 307	System software & Operating system Lab			4	100
CS/MCA 308	Algorithm Implementation Lab			4	100
Total		15	4	12	800

4th semester

Code	Subject	L	T	S	Marks
CS/MCA 401	Computer Network & Distributed Processing	3	1		100
CS/MCA 402	Computer Graphics	3	1		100
CS/MCA 403	Compiler Design	4	0		100
XX/MCA 404	Elective II (CS)	3	0		100
CS/MCA 405	Guided User Interface Lab			4	100
CS/MCA 406	Network Lab			4	100
CS/MCA 407	Compiler Laboratory			4	100

CS/MCA 408	Computer Graphics Lab			4	100
Total		13	2	16	800

5th semester

Code	Subject	L	T	S	FM
CS/MCA 501	Theory of Computation	3	1		100
CS/MCA 502	Software Engineering	3	1		100
XX/MCA 503	Elective ♦ III (HU/CS)	3	0		100
CS/MCA 504	Elective ♦ IV (CS)	3	0		100
CS/MCA 505	Internet Technologies Lab			4	100
CS/MCA 506	Software Engineering Lab			4	100
CS/MCA 507	Seminar		2		50
CS/MCA 508	Project			4	150
Total		12	4	16	800

6th semester

Code	Subject	L	T	S	FM
CS/MCA 601	Industrial Project	-	-	-	400
CS/MCA 602	Grand Viva	-	-	-	100

Elective -I *

M/MCA 305/1 (Statistical Methods)

HU/MCA 305/2 (Principles of Accountancy & Financial Management)

Elective -II *

CS/MCA 404/1 (Graph Theory & Combinatorics)

CS/MCA 404/2 (Management Information Systems)

CS/MCA 404/3 (Mobile Computing)

CS/MCA 404/4 (Information and Coding Theory)

Elective -III *

HU/MCA 503/1 (Corporate Planning)
HU/MCA 503/2 (Entrepreneurship Practice)
HU/MCA 503/3 (Environmental Management)
CS/MCA 503/4 (Software Quality Assurance and Management)
CS/MCA 503/5 (Multimedia technology)

Elective -IV *

CS/MCA 504/1 (Parallel Algorithms)
CS/MCA 504/2 (Artificial Intelligence)
CS/MCA 504/3 (Image Processing & Pattern Recognition)
CS/MCA 504/4 (Neural Network and Machine learning)
CS/MCA 504/5 (VLSI Design)

* Any other modern topic may be included with approval from DAC.

Detailed Syllabus:

1st SEMESTER

Programming Concepts (CS/MCA-101)

Problem analysis, flow charts, decision tables. Pseudo codes and algorithms, high level language and programmer - model of Computer System.

Algorithmic Programming Language:

Representation of integers, reals, characters, constants and variables, arithmetic expressions and their evaluation using rules of hierarchy. Assignment statements, logical constants, variables and expression. Control structures - sequencing, alternation, iteration. Arrays, Manipulating vectors and matrices. Subroutines and linkage. Data management. Sample I/O statements. Documentation, debugging, storage and execution time estimation.

Examples illustrating structured program development, methodology and use of a block structured algorithmic language to solve specific problems.

Digital Logic & Computer Organization (CS/MCA-102)

Introduction to Boolean Algebra: Binary, Octal, Hexadecimal number systems; Logic gates; Truth table ; Boolean functions; SOP,POS form ; Minimization with K-map.

Combinational logic design : Adders / Subtracters ; Multipliers ; Decoders ; multiplexers; Circuit designing with multiplexers.

Sequential Circuit : Latches, flip-flops; Shift registers, counters; Introduction to Sequential Machines; Mealy/Moore m/c; Design of sequential m/c's.

Memory Design : ROM ; RAM ; Address decoding ; ROM based combinational logic design.

Introduction to Computer Organization: ALU; Arithmetic and logic operations, Organization of control units. Memory: types and organization, Cache Memory: basic concepts; direct, associative and set associative cache; performance measures. Peripheral devices: I/O devices (Video terminals and printers) and controllers. Storage devices (Tape and Disks). Programmed and interrupt control mechanisms. I/O controllers, Bus bandwidths, DMA transfer, DMA controller.

Discrete Structures (CS/MCA-103)

Set theory: Review, Relation: Definition, graph of relation, properties, closure.

Function: Review, Composition, Identity, inverse.

Logic: Proposition, equivalence; Predicate calculus - Introductory idea.

Graph Theory: Introduction, data structure, Tree etc.

Algebraic Systems: Operations, Subsystems, Direct product, Isomorphism.

Boolean Algebra: Lattice, Switching functions, Gating Networks, finite Boolean algebra and its applications.

Monoids Automata: Introductory idea.

Generating Function: Introduction, Modeling with Generating Function,

Extracting the co-efficient of simple ordinary Generating Function, Generating Function for arrangements, Partitions.

Recurrence Relations: The First-Order Linear Recurrence Relation, The Second Order Linear Homogeneous Recurrence Relation with constant co-efficients, The method of Generating Functions.

Managerial Economics (HU/MCA-104)

Economic issues and concepts.

Microeconomics: The market ♦ demand, supply, price, elasticities; What determines demand? ♦ consumer theory; production and costs; What determines supply ? ♦ Industrial organization: perfect competition, monopoly, discriminating monopoly, imperfect competition: monopolistic competition and oligopoly; Risk and uncertainty.

Macroeconomics: issues and measurement; a basic model for GNP determination; GNP with an open economy and government; GNP and price, short and long run; Money, monetary institutions, role of money in macroeconomics; monetary and fiscal policy and the business cycle; international trade; inflation, employment/unemployment; economic growth.

Numerical Analysis & Optimization (M/MCA-105)

Computer Arithmetic: Floating point numbers - operations, normalizations and their consequences.

Iterative Methods: Zeros of a single transcendental equations and zeros of polynomials using bisection, method of false position, Newton - Raphson method etc; convergence of solution.

Simultaneous Linear Equations; Solutions of simultaneous linear equations - Gauss elimination method and pivoting; III - conditioned equations and refinement of solutions; Gauss-Seidel iterative method.

Numerical differentiation and integration, Solutions of Differential Equations: Runge'-Kutta methods, Predictor - corrector methods; Automatic error monitoring; stability of solutions.

Interpolations and Approximation: Polynomial interpolation - Newton, Lagrange, etc.; Difference tables; Approximation of function by Taylor series and Chebyshev polynomials.

Linear Programming - Mathematical model, assumptions of linear programming, principles of simplex method, Revised simplex method, Applications, Duality, Dual simplex method, Sensitivity analysis.

Special types of linear programming problems - Transportation and Assignment problems.

Integer programming: Introduction, Cutting Plane method, Branch and Bound

technique, Binary linear programming, Assignment Travelling salesman problems.

Dynamic programming, Deterministic and probabilistic dynamic programming.

Non Linear Programming - The Kuhn Tucker conditions, Quadratic programming, Convex programming.

Replacement Models - Introduction, Replacement policies for items whose efficiency deteriorates with time, Replacement policies for items that fail completely.

Sequencing models - classification of self problems, processing of n jobs through two machines, 3 machines, processing of 2 jobs through m machine.

Deterministic and non-deterministic inventory models - Infinite delivery rate with no back orders, Infinite delivery rate with back orders, finite delivery rate with back orders. Single and multi period models.

Digital Logic Lab (CS/MCA-106)

Hardware Laboratory experiments based on the theory paper CS/MCA-102.

Programming Lab (CS/MCA-107)

Laboratory experiments based on the theory paper CS/MCA-101 using C language.

Numerical Analysis Lab (CS/MCA-108)

Laboratory experiments based on the theory paper CS/MCA-105 using FORTRAN or C.

2nd SEMESTER

Data Structure & Algorithms (CS/MCA-201)

Fundamental Notations: Primitive and composite data types, Time and space complexity of algorithms.

Data Structures: Arrays, Stacks, queues, arrays, linked lists, trees and graphs. Algorithms for traversing the data structures.

File structures: Concepts of fields, records and files, Sequential file and Organization, variable length records and text files, Indexing structures like B-trees, height balanced trees, ISAM, Hashing techniques for direct files. Inverted lists, multi-lists.

Sorting: Internal and external sorts, searching techniques, merging algorithms.

Computer Architecture & Micro Processors (CS/MCA-202)

Representation of information: Number Systems, integer and floating point representation, character codes (ASCII, EBCDIC), Error detection and correction codes.

Overview of the hardware and instruction set of a simple computer; Interface between CPU, Memory, and I/O; Controller design for the processor - hardwired control, Micro-programmed control.

Microcomputer structure (Processor, memory and I/O); Bit slices and 8/16/32 bit microprocessors; microprocessor architecture (registers, index and stack pointers, addressing modes); I/O interface adapters (parallel and serial), interface devices, system clock, clock phase and bit rates; Memory read-write and read only, memory mapping of I/O; Interrupts, types, handling of interrupts, polling and vectored interrupts; Direct memory access methodologies.

Assembly Language Programming: Programmers model of a machine. Example of a typical 16 or 32 bit processor. Registers, Addressing modes, Instruction set. Use of an assembly language for specific programs for typical problems like: Table Search, subroutines, Symbolic and numeric manipulations and I/O.

Software development and debugging aids. Microprocessor based real-time control and instrumentation systems.

Info. Processing and Object Orientation (CS/MCA-203)

Introduction to data processing: Sequential Business files - Master and transaction file, file generations, back-ups and file recovery procedures. Direct and semi-direct file organizations.

COBOL programming ♦ language constructs and structured program development.

Evolution of object oriented programming: (a) Brief history, (b) Application domain, Existing programming languages.

Concept of objects classes, class as a type, properties of a class : Structural Behavioral. Class construction from existing classes. Defining behavior by messages methods. Concepts of polymorphism, operator over loading, encapsulation, public private properties, information hiding object interface. Inheritance of class properties, types of inheritance, singles multiple restricted. Concept of generic objects classes.

C++ : Concepts, differences in the C. Special features such as implementation of various types of function calls (call by value reference) , objects, classes, inheritance, polymorphism, information hiding, class constructor destructor, object creation, class templates, Building your own object libraries.

Case study : How to design a prototype information system in an OO environment, such as C++.

Case study : Advanced Event driven programming concepts , Visual C++ , OLE.

Sociology of Information and Communication Technology (HU/MCA-204)

Introduction:

Basic Concepts (1) ♦ Society, culture, data, information, knowledge, consciousness.

Basic Concepts (2) ♦ Science, technology, system, network, policy.

Basic Concepts (3) ♦ Organization, ICT, Sociology, Why sociology of ICT is required ?

Approaches to information as (a) Resource, (b) Commodity, (c) Perception, (d) Constitutive force in society, (e) Decision making, (f) Policy.

Theoretical overview:

Structure and function of ICT; Simple information transfer model; Theoretical model for information transfer; Role of government, Power and authority in shaping the development of ICT; Impact of ICT on society ♦ an analytical overview.

Case studies:

Experiencing ICT in different space and time ♦ i. BECDU, ii. West Bengal scenario; iii. Situation in India; iv. International context.

Probability & Queuing Theory (M/MCA-205)

Probability: Introduction, Sample spaces; Events and probability; Discrete probability; Union, intersection and compliment of events; Conditional probability; Bayes Theorem.

Random Variables and Distributions: Random variables, discrete probability distributions ♦ binomial, Poisson, hyper-geometric; Density functions and distributions functions; Continuous probability distribution ♦ uniform, exponential, normal, Beta, Gamma, χ^2 , student's t , and F distribution.

Expectations and higher order moments; Characteristic functions.

Laws on Large Numbers: Weak laws and strong laws of large numbers; Central limit theorems and other limit theorems.

Elements of points and interval estimation; Hypothesis testing, Simple applications.

Queuing Model: Specification and measure of queuing systems. Structures of

basic queuing system - definition and classification of stochastic processes- discrete-time Markov Chains-Continuous Markov Chains-birth-death processes.

Birth-death queuing systems: The classical system-Discouraged arrivals-Infinite number of servers (M/M/n)-m server case (M/M/m)-finite storage (M/M/1/M) customer population with single servers (M/M/1/M)

Finite customer population with infinite number of servers (M/M/n/M) ♦ finite customer population, m-server, finite storage (M/M/m/K/M).

Markovian queues: the equilibrium equation ♦ the method of stages -Erlang distribution ♦ the queue M/E/I ♦ the queue E/M/I - Bulk arrival system ♦ Bulk service system ♦ network of Markov queues.

The queue M/G/I: Transition probabilities ♦ Mean queue length - Distribution of number in system. Distribution waiting time. The busy period and its duration. The number served in a busy period.

Reliability: Definition, Quality .vs. reliability, Reliability theory, Product and system reliability, Failure rate, Fault serving and switching reliability.

Info Processing and Object Orientation Lab (CS/MCA-206)

Laboratory experiments based on the theory paper CS/MCA-203 using COBOL and C++.

Data Structure & Algorithm Lab (CS/MCA-207)

Laboratory experiments based on the theory papers CS/MCA-201 using C.

Microprocessor Lab (CS/MCA-208)

Laboratory experiments based on the theory papers CS/MCA-202 using Assembly language programs on SDK of 8085/8086.

3rd Semester

Data Base Management Systems (CS/MCA-301)

Data independence, Data models; network model, DBTG proposal; data definition and manipulation languages (SQL); hierarchical and relational models; storage organization for relations, relational algebra and calculus; relational query languages, query processor and optimizer; functional dependencies; normal forms, multi-valued dependencies; decomposition, integrity; protection, security, concurrency, recovery; concepts of distributed data bases; available data base system; studies on ORACLE/SYBASE etc.

Design and Analysis of Algorithms (CS/MCA-302)

Review of basic data structures such as stacks, queues, linked lists, trees and graphs.

Concepts in algorithm analysis, asymptotic complexity.

Domain independent algorithm design techniques such as divide and conquer, greedy method, dynamic programming, backtracking, branch and bound techniques.

Example algorithm for above techniques from sets, graphs, text processing etc.

Operations with disjoint sets and dynamic sets, Hashing algorithms.

Number theoretic algorithms: exponentiation, GCD, applications in

cryptography.

Polynomial: representation, evaluation, addition, multiplication, FFT algorithm.

Lower bound theory and NP-hard problems.

Operating Systems & System Software (CS/MCA-303)

Review of machine architecture, instruction set, addressing modes of machine.

Distinction between systems software and application software. Layered Organization of system software.

Review of machine and assembly language programming, C-language programming, data structures in C, Control structures of C. Programming exercises.

Assemblers, cross assemblers, macro processors, linking, loading, relocating compiler, interpreter (Lexical and syntax analysis). Use of automation tools.

Editors, debuggers, interactive programming environments.

Review of batch operating system concepts: User job, resources, termination file process systems.

Memory Management: Address protection, segmentation, virtual memory, paging, page replacement algorithms, cache memory, hierarchy of memory types, associative memory.

Support for concurrent process: Mutual exclusion, shared data, critical sections, busy form of waiting, lock and unlock primitives, synchronization, block and wakeup.

Scheduling: Process status, virtual processors, interrupt mechanism, scheduling algorithms, implementation of concurrency, primitive.

System deadlock: Prevention, detection and avoidance.

Multiprogramming system: Queue management, I/O supervisors, memory management.
File system, disk scheduling.

Information System Analysis & Design (CS/MCA-304)

Overview of system analysis and design, Business systems concepts, Systems development life cycle, project selection, feasibility analysis, design, implementation, testing and evaluation.

Project selection: Sources of project requests, managing project review and selection, preliminary investigation.

Feasibility study ♦ Technical and economical feasibility, cost and benefit analysis.

System requirement specification and analysis: Fact finding techniques, Data-flow diagrams data dictionaries, process organization and interactions, Decision analysis, Decision trees and tables.

Detailed design - Modularisation, module specification, file design, systems development involving data bases.

System control and quality assurance - Design objectives reliability and maintenance, software design and documentation tools, top-down, bottom-up and variants. Units and integration testing, testing practices and plans. System controls, Audit trails, CASE tools.

System administration and training, Conversion, and operation plans.

Hardware and Software selection, Hardware acquisition, memory, Process, Peripherals, Benchmarking, Vendor selection, Software selection - Operating system languages, Language processes, Performance and acceptance criteria.

Elective I (XX/MCA-305)

Statistical Methods (M/MCA/305/1)

Statistical Computation: Theory of Sampling; Population and sample; Sampling survey methods and estimation. Moments and moment generating functions; Statistical Inference; Testing of hypothesis and inference.

Linear correlation coefficient; Linear regression; Non-linear regression; Multiple correlation and multi-regression; Regression Analysis: Least Square fit; Polynomial and curve fittings; Linear regression and nonlinear regression algorithms; Multiple regression algorithms.

Time Series and Forecasting: Moving averages Smoothing of curves; Forecasting models and methods.

Statistical Quality Control Methods: Factor analysis, ANOVA, Tests of significance; F-test, Applications to medicine, psychology, agriculture, etc.

Principles of Accountancy & Financial Management (HU/MCA/305/2)

Principles of Accounting : Assets ♦ current assets, fixed assets, liabilities ♦ current liabilities, other liabilities ♦ owners equity : trading account ; accounting records and systems; control counts and subsidiary ledgers; limitations.

Assets and Working Capital : Fixed assets and depreciation ; assets acquisition, disposal, replacement depreciation; intangible assets, inventory methods; sources of working capital, funds, cash flows.

Interpreting Accounts and Financial Statements : Use of ratios in interpreting trading accounts and financial statements, limitations; other methods.

Standards for Control : Variable costs/fixed costs; Cost-volume-profit analysis; Break even Marginal and full costing; Contribution; Standard costing; Analysis of variance; Computer accounting and algorithms.

DBMS Lab (CS/MCA-306)

Laboratory experiments based on the theory papers CS/MCA-301 using ORACLE.

Operating System & System Software Lab (CS/MCA-307)

Laboratory experiments based on the theory paper CS/MCA-303. Programming examples for text handling, file management, interface and device driver programming, multiple precision arithmetic and logic operations, floating point operations, interrupt handling. Operating System ♦ UNIX systems programming.

Algorithm Implementation Lab (CS/MCA-308)

Laboratory work based on theory papers CS/MCA-302 using C, C++.

4th SEMESTER

Computer Network & Distributed Processing (CS/MCA-401)

Communications: concepts of data transmission, signal encoding, modulation methods, synchronization, multiplexing and concentration, coding method, cryptography.

Networks: Communication system architecture-OSI reference model, topology types, selections, design, Local area networks (LAN), CSMA/CD, token bus token ring techniques, link level control (LLC) protocols, HDLC, analysis of protocols and performance, concepts in network layer, switching techniques, routing methods.

TCP/IP, Session, Presentation and Application Layers functions,

Distributed Processing Potential; Client Server Computing, Introduction to Distributed Database.

Computer Graphics (CS/MCA-402)

Intersection of line segments, Sense of a order polygon, Convex hull formation, Generation of line segment, clipping line segments, Clipping polygons, filling polygons, Geometric manipulation (Scaling, Translation, Rotation, Shearing), Curves, Bezier curves, Menu design.

Display Devices: Line and point plotting systems; Raster, vector, pixel and point plotters, continual refresh and storage displays, Digital frame buffer, Plasma panel displays, Very high resolution devices, High-speed drawing, Display processors, Character generators, Colour display techniques (shadow

mask and penetration CRT, colour look-up tables, analog false colours, hard-copy colour printers).

Display Description: Screen co-ordinates, user co-ordinates; Graphical data structures (compressed incremental list, vector list, use of homogeneous co-ordinates); Display code generation; Graphical functions; the view algorithm, two dimensional transformations.

Interactive Graphics: Pointing and positioning devices (cursor, light-pen, digitizing tablet, the mouse, track balls), Interactive graphical techniques; Positioning, Elastic lines, Inking, Zooming, Panning, Clipping, Windowing, Scissoring.

Graphic languages: Primitives (constants, actions, operators, variables), Plotting and geometric transformations, display subroutines.

3-D Graphics: Wire-frame perspective display, Perspective depth, Projective transformations, Hidden line and surface elimination, Transparent solids, Shading, GKS is to be used as the standard teaching tool.

Compiler Design (CS/MCA-403)

Review of system programming, Compilers and Interpreters: Basic concepts.

Scanner: The scanning process; Design using finite state machines; Scanner generator.

Parsing: Top-down and bottom-up strategies.

Top-down Parsing: LL(1); Recursive descent.

Bottom-up Parsing: Operator precedence and simple precedence. LR grammars ◆ LR(0), SLR(1), Canonical LR(1) and LALR(1) parsers; Generation of lookahead sets for LALR(1) parsers.

Symbol Table: Organizations for non-block structured languages and block structured languages.

Running Storage Management: Static allocation; Dynamic allocation; Activation records and their usage; Recursive procedures; Heap allocation- storage request and release strategies.

Semantic Analysis: Basic concepts; Attributed translation; procedure calls; Intermediate codes; Syntax directed translation concepts.

Code Optimization: Basic blocks and optimization; Loop optimization; Flow-graph analysis.

Error handling, Compile compilers, Code generation.

Elective II (CS/MCA-404)

Graph Theory & Combinatorics (CS/MCA-404/1)

Combinatorics: permutation & combination; Generating function; Decision trees.

Counting of Labeled Trees : Cayley's theorem; Counting methods; Polya Theory.

Graphs: Incidence and degree; Representation of a graph; Handshaking Lemma; isomorphism; Subgraphs and union of graphs; Connectedness; Walks, Paths & circuits; Components; Connectedness algorithm, shortest path algorithm, Eulerian graph; Fleury's algorithms and Chinese postman problem; Hamiltonian graphs \diamond necessary & sufficient conditions; Bipartite graphs, Trees, Properties of trees; Pendant vertices in a tree, Centre of a tree; Rooted and binary trees; Spanning trees \diamond Spanning tree algorithms; Fundamental circuits; Cycle space; Spanning tree of a weighted graph; Travelling salesman problem; Cutsets & cut-vertices; Fundamental cutsets; Connectivity and separativity; Max-flow Min-Cut theorem; Network flow algorithms; Matching algorithms.

Planar Graphs: Combinatorial and geometric duals; Kuratowski's graphs; Detection of planarity; Thickness and crossings.

Colourings: Chromatic number; Chromatic polynomial; The six and five colour theorems; The four colour problem.

Directed Graphs: Binary relations; Connectedness; Polish method; Tournaments.

Management Information Systems (CS/MCA-404/2)

Meaning, Nature, Need, Role, Importance, Evolution of management through information system. Relatedness of MIS with management activities, Management functions and decision making.

Concept of 'balanced MIS' effectiveness and efficiency criteria.

Development of MIS - Methodology and tools/techniques for systematic identification, evaluation, modification of MIS.

A study of major financial, production, manpower and marketing MIS.

Advanced MIS - concept, need and problems in achieving advanced MIS, Decision Support System.

Rationale of computer application.

Mobile Computing (CS/MCA-404/3)

Cellular Networks : Introduction, Frequency Reuse, Channel Assignment, Hand-offs, Location Management, Propagation characteristics and Channel modeling.

Wireless Networking : Protocols, Routing, Ad-hoc networking.

Mobile IP : Requirements of Mobile IP, Design Philosophy, Tunneling.

Mobile Database: Software architecture, System level support, Information Management.

Information and Coding Theory (CS/MCA-404/4)

Definition of entropy ♦ Information and entropy theorem of Shanon, binary symmetric channel, Un-uniform codes ♦ source coding, Source without memory, Mixed entropy.

Introduction to various codes ♦ linear codes and their properties, the Hamming code, the dual code, the perfect code, Golay code and their properties, cyclic codes and BCH codes, properties of BCH codes; Generator polynomial, minimal polynomials, check polynomials etc.

Reed-Muller codes, properties of Reed-Muller codes, Rate and bounds of linear codes, Hamming bound, Hamming-Rao bound, Reed-Solomon bounds.

Graphical User Interface Lab (CS/MCA-405)

Courses ♦ Character based terminal independent graphical user interface on UNIX;

Creating graphical user interface on DOS using (system) calls; X-windows programming; Graphical user interface on MS windows; Web-Browser based graphical user interface (GUI).

Network Lab (CS/MCA-406)

Laboratory experiment based on the theory papers CS/MCA-401.

Compiler Laboratory (CS/MCA-407)

Laboratory experiments based on the theory paper CS/MCA-403 using LEX and YACC.

Computer Graphics Lab (CS/MCA-408)

Laboratory experiments based on the theory paper CS/MCA-404.

5th SEMESTER

Theory of Computation (CS/MCA-501)

Regular Languages and Finite Automata: Regular expressions and regular

languages, finite automata, non-determinism, regular languages and non-regular languages.

Context-free Languages and Push Down Automata: Context-free languages, derivation trees and ambiguity, simplified form and normal forms, push down automata, equivalence of CFL and PDA.

Turing Machines, their Languages and Computations: Turing machine, variations of turning machines, recursively enumerable languages, unsolvable decision problems.

Propositional Calculus and First Order Predicate Calculus: Syntax, axioms, inference rules, validity, satisfiability, etc.

Software Engineering (CS/MCA-502)

Introduction to software engineering: software development and life cycle; project size and its categories; Planning a software project; Project-control and project-team standards; Design of solution strategies; Software cost estimation and evaluation techniques, Overview of Management Information Systems.

Software Design: Various design concepts and notations; modern design techniques; Verification and validation methods; Documentation and implementation procedures; Performance of software systems; Software metrics and models Documentation of project-systems, manuals and implementation.

Software Reliability: Definition and concept of software reliability; Software errors, faults, repair and availability; Re-availability and availability models; Use of programming languages relevant to software engineering and database as study tools.

Elective - III (CS/MCA-503)

Corporate Planning (HU/MCA-503/1)

Corporate objectives, goals and policies; Process of corporate planning; SWOT analysis, gap analysis, strategy formulation.

Environmental scanning and analysis; Technological forecasting, Economic and social environment, Business forecasting, Market dynamics, government policies, Elements of futurology, strategies for growth and survival; Long range planning for R & D, strategies for technology based industries, multinational

operations.

Investment evaluation, capital budgeting, risk analysis, computer modeling.

Organizing for corporate planning, implementing corporate strategies, Business plans, Resources planning, management controls and information systems.

Entrepreneurship Practice (HU/MCA-503/2)

Entrepreneurship: Meaning ♦ importance ♦ psychological, sociological; factors and distinctive competence. Identification of opportunities ♦ choice of technology, Make or buy decision ♦ biography and status of Indian and worldwide entrepreneurs.

Production management: production process, planning, control, product development, testing facilities, patents, quality assurance, time control, cost control, total quality management.

Resource Management: Financial management, Human resource management, Marketing Management, Information Management.

Project formulation: need, scope and approaches; scopes in ICT based projects, stages and methodology in project identification, project report writing, appraisal, economic viability and financial feasibility analysis, business and industrial laws, labour relations.

Entrepreneurs in society: Social responsibilities, shift to ethics, institutionalizing ethics, challenges of relativism.

Environmental Management (HU/MCA-503/3)

Introduction: The issues involved, the state of India's environment, Environmental theories, Political economy of sustainable development.

Specific problems and policy implementations: natural resource management, industrial and transportation pollution control, energy planning, biodiversity and biotechnology, solid and liquid waste disposal.

Valuation of environmental benefits and costs; Environmental legislation; global issues like ozone depletion, global warming; social issues like inequality and gender issues and their relation to environment.

Software Quality Assurance & Management (CS/MCA-503/4)

Software development life cycle. Analysis & Design tools and techniques.

Verification and validation method, testing, concept of software quality, quality metrics and models. Performance Evaluation.

Concepts of Software reliability, errors, faults, repair and availability.

Relevant Case studies.

Multimedia Engineering (CS/MCA-503/5)

Introductory ideas on physics of sound and light, physiology and psychology of hearing and vision. Sound recording technology ♦ microphones, loudness, tone control. Film and TV, video signals, computer video standards, graphics file formats, text and hypertext. Digital audio and video, standard interfaces, image processing and compression techniques.

Media production and hardware: audio production- tools and concepts, editing, MIDI. Video production ♦ stages, preproduction planning, production show, post-production and use of computers, 2D and 3D graphics and animation, morphing. Multimedia authoring ♦ windows, OLE; graphics browser, HTML files, Internet based multimedia.

Elective ♦ IV (CS/MCA-504)

Parallel Algorithms (CS/MCA-504/1)

Models of parallel computation, performance considerations and complexity issues. Basic techniques including balanced trees, pointer jumping, Divide and conquer, Partitioning, pipelining, accelerated cascading, symmetry breaking. List & tree algorithms, ranking, prefix sums, Euler's ♦ tour techniques, tree traversals, tree contraction and applications. Searching, sorting and merging techniques, Britonic merge sort, odd-even transposition, cole & Vishkin's ♦ merge sort. Graph algorithms for connected & binconnected components, spanning trees, finding shortest path, Ear decomposition etc. Matrix manipulation algorithms and DFT algorithms. Notion of P-completeness, of some basic problems.

Artificial Intelligence (CS/MCA-504/2)

Introduction of AI: Simulation of so-called intelligent behaviour, in different areas; Problem solving: games, natural language, question answering, visual perception, learning; Aim-oriented (heuristic) algorithms versus solution guaranteed algorithms.

State-space searches: DFS, BFS, Iterative Deepening, Hill Climbing, best first search, A*, IDA* algorithm, AND-OR graph searches, Means-end analysis, Constraint satisfaction problem etc.

Knowledge Representation: First-order predicate calculus Horn's clauses; The language PROLOG; Semantic nets, partitioned nets; Minsky's frames, case-gramer theory; Production rules, knowledge base, the inference system, forward and backward deduction.

Expert System: Existing systems (DENDRAL, MYCIN); domain exploration; Meta-knowledge, expertise transfer, self-explaining systems.

Machine learning: Inductive learning, explanation based learning, genetic algorithm, multiple classifier systems.

Image Processing & Pattern Recognition (CS/MCA-504/3)

Introduction: Importance and use of I.P.

Image characterization: Storage and display - human visual perception, sampling and quantization. Image model, Camera video photographic systems, Image storage and file formats, Display and hard copy devices, Imaging system.

Image Geometry: Zooming, Rotation, Cut and paste warping.

Image representation: Neighbours, connectivity, distance transform, component labeling, skeletonizing etc.

Histogram techniques: Computing histogram, Graylevel scaling, equalization, specification and thresholding.

Colour: Colour model and chromaticity, Pseudo and false colour, colour displays and palletes.

Spatial filters: Convolution masks, edge detection filters, mean and median filters, enhancement filters.

Morphological filtering: Dilation and erosion, opening and closing, hit and miss transforms, outlining and skeletonizing, Spatial frequency filtering: Discrete Fourier transforms and FFT, other transforms, Wiener filtering.

Adaptive filters: Order statistics, Minimum mean square error filter, double window modified trimmed mean filter, window edge detection filter, signal adaptive median filter and related topics.

Machine Learning & Neural Network (CS/MCA-504/4)

Machine learning & AI ♦ introduction, hierarchical perspective and foundations. Rote learning, learning by advice, learning in problem solving, inductive learning, explanation based learning, learning from observation and discovery, learning by analogy. Introduction to formal learning theory.

Biological neurons and brain, models of biological neurons, artificial neurons and neural networks. Early adaptive nets, Hopfield nets, back error propagation, competitive learning, lateral inhibition and feature maps. Stability ♦ Plasticity and noise saturation dilemma, ART nets, cognitron and neocognitrons.

Neural nets as massively parallel, connectionist architecture. Application in solving problems from various areas e.g. AI, Computer hardware, networks, pattern recognition, sensing & control etc.

VLSI Design (CS/MCA-504/5)

Overview of microelectronics and introduction to MOS technology.

Methods of physical design in VLSI systems ♦ circuit partitioning, floor planning, routing systems, layout generation, layout editors and compaction.

Electronic Design Automation: tools like PSPICE; VLSI tools: VERILOG, VHDL.

Computational geometry: Algorithms relevant to VLSI design.

Testing methodology for VLSI and testable VLSI design.

Internet Technologies Lab (CS/MCA-505)

Socket programming, HTTP, FTP, SMTP protocols.

Concepts and working knowledge of HTML, DHTML, JAVASCRIPT.

Server side scripting ♦ PHP, ASP, JSP. CGI programming using shell, perl, C.

Using HTTP client, E-mail client, FTP client APIs ♦s in C or JAVA.

Software Engineering Lab (CS/MCA-506)

Laboratory experiments based on the theory paper CS/MCA-502, through use of CASE tools and relevant packages.

Seminar (CS/MCA- 507)

Each student shall deliver seminar and participate in group discussions on current relevant topics.

Project (CS/MCA 508)

To be offered by the faculty members of the department and to be performed in Departmental laboratory.

Faculty Profile in M.C.A. Programme

SL No	NAME	DESIGNATION	SUBJECT TEACHING
1.	Dr. Uma Bhattachraya	Prof. & HOD	Language Processor, Systems Programming.
2.	Dr.Amit Kumar Das	Professor.	Organization & Assembly Language.
3.	Dr. Jaya Sil	Professor.	Artificial intelligence
4.	Dr. Susanta Chakraborty	Professor.	VLSI Design & Testing
5.	Sri. Dhurjoti Mohan Kar	Asst. Prof	Software Engg., Management Information System.
6.	Dr. Sipra Das Bit	Asst. Prof	DBMS, Mobile Computing.
7.	Dr.Biplab Kumar Sikdar	Asst. Prof	Computer Arch., Operating System.
8.	Sri. Manas Hira	Asst. Prof	Principles Of Programming Languages.
9.	Sri Somnath Pal	Asst. Prof	Symbolic Logic & Logic Programming , Operating system.
10.	Dr. Abhik Mukherjee	Lecturer	Information & coding Theory.
11.	Dr. Sulata Mitra	Lecturer	Computer Arch. , Microprocessor.
12.	Sri. Apurba Sarkar	Lecturer	Data Structure & Algorithms.
13.	Sri . Asit Kumar das	Lecturer	Introduction to Computing
14.	Sri. Sekhar Mondal	Lecturer	VLSI Design.
15.	Sri. Saptarshi Ghosh	Lecturer	Information retrieval & Data Mining

Laboratory facilities exclusive to the PG programme :. Image Processing

Special Purpose

- . Software, all design tools in case : Nil
- . Academic Calendar and frame work
- . **Research focus:** Image Processing, Mobile Computing , Cellular Automata, Soft Computing, Broad Band Computing.
- . **Publications (if any) out of research in last three years out of masters projects : 10**