MAHATMA GANDHI UNIVERSITY

KOTTAYAM

M Sc PROGRAMME

IN

Information Technology(I T)

(Affiliated Colleges)

REGULATIONS, SCHEME AND SYLLABUS

(Effective from 2012 Admissions)

M.Sc. PROGRAMME IN I T

2012

(Affiliated Colleges)

1. Eligibility

The eligibility for admission to M Sc Information Technology programme in affiliated institutions under Mahatma Gandhi University is a B Sc Degree with Mathematics /Computer Science /Electronics /IT as one of the subjects under part III (Main / Core + Subsidiaries/Complementaries) with not less than 50% marks or BCA degree with not less than 50% marks.

For CBCSS pattern, the eligibility is B Sc Degree with Mathematics /Computer Science /Electronics /IT as one of the subjects under part III Core Group (Core + Complementory+ Open Courses) with not less than CGPA of 2.00 out of 4 or B C A with not less than CGPA of 2.00 out of 4

B Tech with not less than 50% marks in mathematics (aggregate of all mathematics papers and a total of 50% for the entire course)

Note: Candidates having degree in computer science/Computer Application/IT/Electronics shall be given a weightage of 20% in their qualifying degree examinations.

2. Admission

The admission to the M Sc programme shall be as per the rules and regulations of the University. Students admitted under this programme are governed by the Regulations in force.

3. Programme Structure and Duration

The duration of the programme shall be 4 semesters. The duration of each semester shall be 90 working days. Odd semesters from June to October and even semesters from December to April. There shall be one month semester breaks each in November and May.

A student may be permitted to complete the programme, on valid reasons, within a period of 8 continuous semesters from the date of commencement of the first semester of the programme.

The programme shall include two types of courses, Core courses and Elective Courses .

There will be 4 Core courses and 2 Practical courses for the First semester, 3 Core courses , 1 Elective and 2 Practical courses for Second semester & 3 Core courses , 1 Elective , 1 Practical & 1 Mini Project for Third semester. In the last semester there will be one Main Project . At the end of the programme, there will be a comprehensive Viva-Voce which covers questions from all courses in the programme.

4. Attendance

The minimum requirement of aggregate attendance during a semester for appearing for the end semester examination shall be 75%. A student who does not satisfy the requirements of attendance shall not be permitted to take the end Semester examinations.

5. Promotion

A student who registers for the end semester examination shall be promoted to the next semester.

6. Examinations

There shall be University examination at the end of each semester.
Practical examinations shall be conducted by the University at the end of each semester.
Project evaluation and Viva -Voce shall be conducted at the end of the programme only. Practical examination, Project evaluation and Viva-Voce shall be conducted by two external examiners and one internal examiner.
End-Semester Examinations: The examinations shall be normally at the end of each semester.
There shall be one end-semester examination of 3 hours duration in each lecture based course and practical course.

7. Evaluation and Grading

Evaluation: The evaluation scheme for each course shall contain two parts; (a) internal evaluation and (b) external evaluation. 25% weightage shall be given to internal evaluation and the remaining 75% to external evaluation and the ratio and weightage between internal and external is 1:3. Both internal and external evaluation shall be carried out using Direct grading system.
Internal evaluation: The internal evaluation shall be based on predetermined transparent system involving periodic written tests, assignments, seminars and attendance in respect of theory courses and based on written tests, lab skill/records/viva and attendance in respect of practical courses. The weightage assigned to various components for internal evaluation is as follows.

Components of Internal Evaluation

	Component	Weightage
i)	Assignment	1
ii)	Seminar	2
iii)	Attendance	1
iv)	Two Test Papers	2

Letter Grade	Performance	Grade Point (G)	Grade Range
A	Excellent	4	3.50 to 4.00
B	Very Good	3	2.50 to 3.49
C	Good	2	1.50 to 2.49
D	Average	1	0.50 to 1.49
E	Poor	0	0.0 o 0.49

Grades for Attendance

% of attendance	**Grade**
>90%	A
Between 85 and 90	B
Between 80 and below 85	C
Between 75 and below 80	D
< 75	E

Assignment

Components	Weight
Punctuality	1
Review	1
Content	2
Conclusion	1
Reference	1

Seminar

Components	Weights
Area / Topic selected	1
Review / Reference	1
Content	2
Presentation	2
Conclusion	1

Practical – Internal

Components	**Weights**
Attendance	1
Laboratory Involvement	2
Written / Lab Test	2
Record	2
Viva-voce / Quiz	1

Practical – External

Components	**Weights**
Design and Coding	2
Output	2
Record	2
Viva-voce	1

To ensure transparency of the evaluation process, the internal assessment grade awarded to the students in each course in a semester shall be published on the notice board at least one week before the commencement of external examination. There shall not be any chance for improvement for internal grade.

The course teacher and the faculty advisor shall maintain the academic record of each student registered for the course which shall be forwarded to the University through the college Principal and a copy should be kept in the college for at least two years for verification.

External evaluation: The external Examination in theory courses is to be conducted by the University with question papers set by external experts. The evaluation of the answer scripts

shall be done by examiners based on a well-defined scheme of valuation. The external evaluation shall be done immediately after the examination preferably through Centralized Valuation

8. Direct Grading System

Direct Grading System based on a 5 - point scale is used to evaluate the performance (External and Internal Examination of students)

DIRECT GRADING SYSTEM

Letter Grade	Performance	Grade point(G)	Grade Range
A	Excellent	4	3.5 to 4.00
B	Very Good	3	2.5 to 3.49
C	Good	2	1.5 to 2.49
D	Average	1	0.5 to 1.49
E	Poor	0	0.00 to 0.49

The overall grade for a programme for certification shall be based on CGPA with a 7-point scale given below

CGPA	Grade
3.80 to 4.00	A+
3.50 to 3.79	A
3.00 to 3.49	B+
2.50 to 2.99	B
2.00 to 2.49	C+
1.50 to 1.99	C
1.00 to 1.49	D

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A separate minimum of C Grade for Internal and External are required for a pass for a course. For a pass in a programme a separate minimum Grade C is required for all the courses and must score a minimum CGPA of 1.50 or an overall grade of C and above.

Each course is evaluated by assigning a letter grade (A, B, C, D or E) to that course by the method of direct grading. The internal (weightage =1) and external (weightage =3) components of a course are separately graded and then combined to get the grade of the course after taking into account of their weightage.

A separate minimum of C grade is required for a pass for both internal evaluation and external evaluation for every course.

A student who fails to secure a minimum grade for a pass in a course will be permitted to

write the examination along with the next batch.
There will be no supplementary examinations.

After the successful completion of a semester, Semester Grade Point Average (SGPA) of a student in that semester is calculated using the formula given below. For the successful completion of semester, a student should pass all courses and score a minimum SGPA of **1.50.** However, a student is permitted to move to the next semester irrespective of her/his SGPA.
For instance, if a student has registered for 'n' courses of credits C1, C2 ……,Cn in a semester and if she/he has scored credit points P1, P2……,Pn respectively in these courses, then SGPA of the student in that semester is calculated using the formula.

SGPA= (P1+P2+…….+Pn)/ (C1+C2+……+Cn)

CGPA = [(SGPA)1*S1 + (SGPA)2*S2 + (SGPA)3*S3 + (SGPA)4*S4]/ (S1+S2+S3+S4)

Where S1, S2, S3, and S4 are the total credits in semester1, semester2, semester3 and semester4.

9. Pattern of Questions

Questions shall be set to assess knowledge acquired, standard application of knowledge, application of knowledge in new situations, critical evaluation of knowledge and the ability to synthesize knowledge. The question setter shall ensure that questions covering all skills are set. He/She shall also submit a detailed scheme of evaluation along with the question paper. A question paper shall be a judicious mix of short answer type, short essay type / problem solving type and long essay type questions.

Weight : Different types of questions shall be given different weights to quantify their range as follows :

Sl. No.	Type of Questions	Weight	Number of questions to be answered
1	Short Answer type questions (not exceeding 1 page)	1	5 out of 8
2	Short essay / problem solving type questions (not exceeding 2 pages)	2	5 out of 8
3	Long Essay Type questions	5	3 out of 6

The Final Grade Card issued at the end of the final semester shall contain the details of all courses taken during the entire programme including those taken over and above the prescribed minimum credits for obtaining the degree. The Final Grade Card shall show the CGPA and the overall letter grade of a student for the entire programme.

CURRICULUM DESIGN ABSTRACT

Semester I

MSCIT1C1- Mathematical Foundations of Information Technology

MSCIT1C2- Digital Electronics and Introduction to computers

MSCIT1C3- Object Oriented Programming with C++

MSCIT1C4- Data structures and Algorithms

MSCIT1P5- Programming in C++ (Lab)

MSCIT1P6- DOS,Windows,Linux (Lab) and Seminar

Semester II

MSCIT2C1- Operating Systems

MSCIT2C2- Computer Communication and Network Architecture

MSCIT2C3- RDBMS and Oracle

MSCIT2E4- Elective I

MSCIT2P5- Oracle Lab

MSCIT2P6- Visual Programming (Lab) and Seminar

Semester III

MSCIT3C1- JAVA Programming

MSCIT3C2- Software Engineering

MSCIT3C3- System Software and Compiler Design

MSCIT3E4- Elective II

MSCIT3P5- JAVA Programming Lab

MSCIT3P6- Mini Project in PHP & MySQL and Seminar

Semester IV

MSCIT4D1- Project

Viva-Voce

C: Core P: Practical E: Elective D: Main Project

Elective I

1.Artificial Intelligence

2.Soft Computing and Genetic Algorithms

3.Computer Graphics

4. Decision Support Systems

Elective II

1.Digital Image Processing

2.Distributed Computing

3. Multimedia and Virtual Reality

4.Client/Server Computing

Semester	Course	Teaching Hrs.		Credit	Total Credits
		Th	Practicals		
I	MSCIT1C1	4	-	4	22
	MSCIT1C2	4	-	4	
	MSCIT1C3	4	-	4	
	MSCIT1C4	4	-	4	
	MSCIT1P5	-	4	3	
	MSCIT1P6	-	5	3	
II	MSCIT2C1	4	-	4	21
	MSCIT2C2	4	-	4	
	MSCIT2C3	4	-	4	
	MSCIT2E4	4	-	3	
	MSCIT2P5	-	4	3	
	MSCIT2P6	-	5	3	
III	MSCIT3C1	4	-	4	21
	MSCIT3C2	4	-	4	
	MSCIT3C3	4	-	4	
	MSCIT3E4	4	-	3	
	MSCIT3P5	-	4	3	
	MSCIT3P6	-	5	3	
IV	MSCIT4D1 Project	-	16	14	18
	Viva-Voce	-	-	4	

MSCIT1C1 Mathematical Foundations of Information Technology

Module I (18 Hrs)

Set Theory : Basic concepts of set Theory, Notation, inclusion and equality of sets, the Power set, some operations on sets, The Power set, some operations on sets Venn diagram, some basic set identities. The principle of specification, ordered pairs and n-tuples, Cartesian products Relations, Equivalence relations, partial ordering functions

Module II (20 Hrs)

Graph :- Finite and infinite graph incidence and degree, isolated vertex pendant vertex and Null graph, isomorphism subgraph, walks, paths and circuit, connected and disconnected graph components, Euler graph, Hamiltonian path and circuit, the travelling salesman problem.

Module III (10 Hrs)

Trees:- Some properties of trees pendent vertices in a tree, distance and centers in a tree, spanning trees fundamental circuit, cut set and cut vertices.

Module IV (18 Hrs)

Planar graph, combinatorial Vs. Geometric graph, Kuratowski's two graph, Detection of planarity, Geometric dual, Matrix representation of graph, incidence Matrix Path matrix, adjacency matrix, coloring chromatic numbers, chromatic polynomial six and five color theorems, four color problem.

Module V (6 Hrs)

Fuzzy sets :- Fuzzy logic, introduction crisp sets, An over view, fuzzy sets basic types, Fuzzy sets Basic concepts Fuzzy sets versus crisp sets, representation of fuzzy sets.

References

1. Discrete Mathematical structures with Applications to computer science – J.P.Tremblay, R.Manohar
2. Graph Theory – Narsingh Deo
3. Fuzzy sets and Fuzzy logic – Theory and application – George J.KIPr and Boyuan
4. Graph Theory – Frank Harary
5. Graph Theory – Frank Harary
6. Set theory and related topics – Seymour Lipschutz

MSCIT 1C2 Digital Electronics and Introduction to Computers

Module 1 (12 hrs)

Number systems, Operations and Codes :- Decimal numbers Binary Numbers Decimal to binary conversion Binary arithmetic 1s and 2s complement of binary numbers hexadecimal numbers octal numbers binary coded decimal error detection and correction codes.

Logic gates :- AND OR NAND NOR Exclusive OR Exclusive NOR Gates.

Module 2 (10 hrs)

Boolean algebra and logic simplification: - Laws and rules of Boolean algebra De-Morgans theorems simplification of logic expressions using Boolean algebra

Karnaugh map The Universal property of NAND and NOR gates

Module 3 (20 hrs)

Logic Functions :- Adders Parallel Binary Adders Multiplexers De-multiplexers Parity Generators/Checkers.

Flip Flops, Flip-Flop Applications. Counters :- Asynchronous Counter Operation Synchronous Counter Operation Up/Down Synchronous Counters Design of Synchronous Counters Cascaded Counters, Shift Registers-

Module 4 (16 hrs)

Introduction: Parts of Computer System- Hardware, Software, Data, Users, Computer Languages - Machine , Assembly Language and Higher Level languages

Interacting with Computers:-Input Devices - Key Board, Mouse, Variants of Mouse, Hand held devices, Optical Input devices. **Output Devices:** Monitors, Sound Systems, and Printers.

Memory-different types of RAM and ROM

Module 5 (14 hrs)

Operating Systems and Networking:• Definition of an Operating System - Different types of PC Operating Systems**.** Computer Networks • uses - categories of networks - LAN, WAN, The Internet

References

1. Digital Fundamentals Eighth edition , Floyd and Jain , Pearson education
2. Peter Norton's Introduction to Computers, Sixth Edition, Published by Tata McGrawHill
3. Digital logic and computer design Morris Mano PHL
4. Digital computer fundamentals - Bartee T
5. Computer Fundamentals By P K Sinha & Priti Sinha Fourth Edition.
6. Introduction to Computer Science, ITL Education Solutions limited.

MSCIT 1C3 Object Oriented Programming with C++

Module 1 (15 hours)

Introduction to programming - Concepts of Programming, Concept of an algorithm;

Introduction to object oriented concepts - features of object oriented programming;

C++ programming basics - data types, operators, precedence of operators, control structures, Functions.

Module 2 (15 hours)

Classes and objects, constructors, destructors, objects as function arguments, inline functions, friend functions, friend classes, array of objects, static members, pointers

within a class, pointers to objects, array of pointers to objects, pointer to object members, this pointer.

Module 3 (10 hours)

Overloading - function overloading, operator overloading, overloading unary operators,

overloading binary operators, data conversion.

Module 4 (18 hours)

Inheritance - Base class and derived class, forms of inheritance, modes of inheritance, constructors in derived class; pointer to derived class objects;

Polymorphism - virtual function, pure virtual function, abstract classes

Module 5 (14 hours)

Files and streams - streams, predefined console streams, string I/O, object I/O, files, file modes, read/write pointers, file input/output;

command line arguments;

Templates - function template, class template;

Exception handling.

References

1. Robert Lafore, Object Oriented Programming in C++, Galgotia

2. Schaums Outline series, Programming in C++

3. Venugopal, Rajkumar, Ravishankar, Mastering C++, Mc Graw Hill

4. Stroustrup, Bjarne, The C++ Programming Language , Addison Wesley

5. Sourav Sahay, Object Oriented Programming with C++, Oxford University Press

6. E. Balaguruswamy, Object Oriented Programming in C++, McGraw Hill

MSCIT1C4 Data structures and Algorithms

Module 1 (22 Hours)

Introduction: algorithmic notation- analysis of algorithms

Concept of data structures, types of data structures ,examples.

Arrays : Organization, representation and implementation of arrays, multidimensional arrays- sparse matrices – string representation and manipulation

Implementation of Stacks and Queues, application of stacks- evaluation of arithmetic expressions-Circular Queues (Sequential),

Priority Queues, Double ended queues,.

Module 2 (22 Hours)

Lists: Representation and implementation of singly linked list, doubly linked list, circular lists, linked list representation of stacks and queues, examples. Header linked list

Dynamic storage management:. Garbage collection

Module 3 (13 Hours)

Trees: Representation and Implementation, Binary trees, insertion and deletion of nodes in binary tree, expression trees, binary tree traversals, Binary search trees, Balanced trees (AVL trees), B- trees: insertion and deletion of nodes.

Module 4 (15 Hours)

Search techniques: sequential (linear) search, binary search, Sorting techniques : Bubble sort, quick sort, selection sort, heap sort, simple insertion sort, heap sort, merge sort, radix sort.

Hashing : different hashing functions.

References

1. Aaron M Tenenbaum, Moshe J Augustein , Data structures using C & C++ (Pearson Education)
2. Ellis Horowitz, Sartaj Sahini , Fundamentals of data structures (Galgotia)
3. E M reingad and W hamen , data structures CBS publishers and distributers

4. Ellis Horowitz, Dinesh Mehta , Fundamentals of data structures in C++ (Galgotia)
5. Robert Kruse, C. L. Tondo , Bruce Leung, Data Structures and Program Design in C (Second Edition), Pearson Education.

MSCIT 1P5 Programming in C++

Simple Programs using OOP concept	4 hrs.
Inline and friend functions	4 hrs.
Constructors and destructors	6 hrs.
Array of objects	4 hrs.
Overloading	8 hrs.
Inheritance	7 hrs
Pointers and memory management	10 hrs
Virtual functions	5 hrs
Files	8 hrs
Command line arguments	4 hrs
Templates	8 hrs
Exception handling	4 hrs

MSCIT1P6 DOS,Windows,Linux (Lab)

Atleast 25 programs , that should cover the entire syllabus

Module I (10 Hrs)
DOS- types of DOS –System prompts – changing the system prompts-Internal commands-Batch files- configuration- External commands

Module II (12Hrs)

Windows 2000 – windows explorer- taskbar-start menu- Add and Remove programs, Change icons – Mouse settings –Multimedia- creating shortcuts-Accessories-other components.

Module III (20Hrs)

Linux -introduction, features, advantages, Booting process, kernel, file systems, wild card characters, simple commands-ls, cd, pwd, cp, mv, rm, mkdir, rmdir, wc, ln, file, cmp, comm -file permissions chmod, chown, chgrp- other file related commands – touch, dd, nl, tail, head, shell variables-shell types

Module IV (24 Hrs)

Communication &Scheduling commands- mail, wall, write, talk, at, cron, crontab.
process related commands- ps, kill, General purpose commands – date, who, who am I, man,cal,lpr,tee,expr,bc,pipes-redirection-filters-sort,grep,uniq,more,pr,cut,paste,tr,Editing files using vi editor.

Module V (24 Hrs)

Shell Programming-variables, control structures, operators, simple shell programs.

References

1. Linux (Fedora) Bible, Christopher Negus, Wiley India Edition, 2007
2. Advance MS DOS – Ray and Dumean
3. Windows 2000 Professional – Michael Price
4 DOS in easy steps – Harshad Kotecha
5. Special Edition using Linux – 3rd Edition Jack Tacket Jr. David Gunter

MSCIT 2C1 Operating Systems

Module 1 (Hours 15)

Introduction to operating systems- Functions of operating system - Types of operating systems- Batch Operating System, Multi programming-Time sharing, Real time, distributed operating systems.

Module 2(Hours 15)

Processor Management- Job and process concept, Operating system view of process, process state, state transition diagram, PCB (Process control block), System state and process lists, process switch, threads, Multi-threading operating system, operating system services for process management.
Process Scheduling:-Types of schedulers, scheduling and performance criteria, scheduling algorithms, multiple processor scheduling.

Module 3 (Hours 12)
Inter process synchronization and communication-Concurrent Processes- need for inter process synchronization, critical section problem, mutual exclusion-mutual exclusion algorithms, semaphore definition, primitives, implementation of semaphores, monitors, inter process communication using messages.
Deadlocks: -Definition –Deadlock characterization-Resource allocation graph, methods for handling deadlocks, deadlock prevention, deadlock avoidance-safe state-resource allocation graph algorithm, Banker‘s algorithm, deadlock detection, recovery from deadlock.

Module 4 (Hours 14)
Memory Management:-Preliminaries-address binding , dynamic linking and loading, Overlays. logical versus physical address space, Swapping, Contiguous allocation –fragmentation – compaction - Paging-principles of page allocation.
structure of page table- hardware support, multi level paging, Segmentation-principles of operation, hardware, implementation of segment table, protection and sharing, fragmentation, segmentation with paging. Virtual Memory-Demand paging –Page replacement algorithms page allocation policies – Thrashing - hierarchical address translation tables - MMUS.

Module 5 (Hours 16)
File Management:-File structure, File types, File access, File attributes, File operations. Directories-Flat directory systems, hierarchical directory systems. File system implementation-Allocation methods, contiguous allocation, linked allocation, indexed allocation

References
1 Silberschatz, Galvin, Gagne: Operating System Concepts, 7th Edition
2 Milan Milenkovic :Operating systems‘ TATA Mc GrawHill.
3 Andrew S. Tanenbaum, ―Modern Operating System, Prentice Hall India
4 Dhamdhere, system software and operating systems – Tata Mc Graw Hill
5. H M Deitel An Introduction to Operating System – Adison Wesley
6. Tanenbaum, Modern Operating systems – Prentice Hall
7. Donovan, John J,System Programming – Mc Graw Hill
8. William Stallings, Operating Systems – Pearson Education

MSC IT2C2 Computer Communication and Network Architecture

Module 1(14 Hours)
Networking concepts:-What is network,classification of networks:LAN,MAN,WAN and the internet.Protocols and protocol architecture.A three layer model,five layer model,OSI,Tcp/Ip ref.models,Camparison of two models,critiques of two models,Novel Netware.

Module2 (12 Hours)

DataLink Layer:- Data Link Control - Line Discipline - ENQ/ACK - Poll/Select - Flow Control - Stop and Wait - Sliding Window - Error Control , ARQ - Different Types. Data Link Protocols - Asynchronous and Synchronous Protocols, Frames - Character Oriented - Bit Oriented, HDLC - Link Access Procedures.

Module3 (12 Hours)

Network Layer:-Services of NW layer,Routing:Characteristics,performance criteria,routing strategies,fixed routing, random,routing,Adaptive routing,congestion control,x.25 protocol.

Module 4(18 Hours)

LAN:-LAN protocol architecture(IEEE 802 ref.model),Topologies Bus,Tree,ring and star.MAC and LLC.

LAN Systems:-Ethernet,token bus,token ring.Ethernet and Fast Ethernet (CSMA/CD)-IEEE 802.3,MAC:CSMA/CD and its precursors(pure and slotted ALOHA,CSMA),IEEE 802.3 MAC Frame format,IEEE 802.4-token bus LAN and frame format,IEEE 802.5 LAN and frame format.

Module5(16 Hours)

Transport Layer:-Services,elements of transport protocol,sample transport protocol.
ATM:- Protocol architecture,ATM Logical Connection,ATM Cells ,transmission of ATM Cells,ATM Adaptation Layer.

References

1.Data and Computer communications-William stallings.
2.Computer Network-Tanenebaum
3.Introduction to data communication and networking-Behrouz Forougan

MSCIT2C3 RDBMS AND ORACLE

Module 1: INTRODUCTION (14 hours)

Database, need for DBMS, users, architecture of DBMS, data models, views of data, data Independence, conventional data models & systems, ER model, attributes, relationship attributes, relationship set, generalization, aggregation, structure of relational Database and different types of keys, expressing M: N relation.

Module 2: Relational Model & Relational Database Design (18 hours)

Hierarchy model-network model-, Relational data model & relational algebra, Relational model concept, Relational model constraints, relational algebra, relational database language, Data definition in SQL, Views and Queries in SQL, Specifying constraints, indexes in SQL, Specifying constraints management systems, ER to Relational, Functional dependencies, Normalization, multi-valued and other kinds of Dependencies.

Module 3: File Structure (16 hours)
Overview of physical storage media, Magnetic disk, RAID, Tertiary storage, Storage access, File organization, Organization of records in files, Data dictionary storage,
Indexing and hashing; ordered index-B+ tree index files, -B Tree index files-static hashing Dynamic hashing-multiple key access

Module 4: Transaction and Concurrency control (12 hours)

Concept of transaction, ACID properties, serializibility, states of transaction, Concurrency control, Locking techniques, and Time stamp based protocols, Granularity of data items, Deadlock.

Module 5: Database system Architectures (12 hours)

System Architectures for DBMS, system catalog information in Oracle, Object Oriented Database, Distributed Data Bases, Parallel Database, New Applications,

References
1. Avi Silberschatz,Henry F. Korth, S. Sudarshan,|| Database System Concepts—, *Fifth Edition*, McGraw-Hill

2. Ramez Elmasri, Sham Navathe, "Fundamentals of Database Systems", Fifth edition,Pearson education

3. Raghu Ramakrishnan, Johannes Gehrke ,||Database Management systems||, Third Edition,(McGraw-Hill)

MSCIT2E4(3) COMPUTER GRAPHICS

Module 1 (14 HOURS)

Display devices: Refresh CRT, raster scan display, random scan display, color CRT monitors, flat panel displays, DVST, 3d viewing devices, stereoscopic and virtual reality, digital frame buffer, Raster scan systems-video controller, raster scan processor

Module 2 (12 HOURS)

Interactive graphics: Pointing and positioning devices, digitizers, light pen, pointing and positioning techniques.

Module 3 (14 HOURS)

2D graphics: Line drawing techniques, circle generation, filling algorithms , character generation, 2D transformations
Windowing and clipping: concepts, window - view port transformation, clipping algorithm, line clipping, polygon clipping, text clipping

Module 4 (16 HOURS)
3D Graphics : Object representation , projection , 3D transformations, hidden line removal algorithm , depth buffer method ,back face detection , scan line method ,area sub division method .

Module 5 (16 HOURS)
Curves and surfaces**:** Bezier curves and B.Spline curves, octrees , fractals.

References

1. Hearn D, M. P. Baker, *Computer Graphics*, Prentice Hall of India
2. *Principles of interactive computer graphics* . Newmann S Sproull, Mc Graw Hill
3. *Computer Graphics*- Harrington Prentice hall
4. *Computer Graphics* – Plastock and kalley ,schaum 's series , Mc Graw Hill
5. *Computer Graphics principles and practice* – Foley and others , Addison Wesley

MSCIT2P5 ORACLE LAB

Practical to be chosen from the entire syllabus of MSCIT2C3 RDBMS & ORACLE

Module 1: INTRODUCTION (14 hours)
Database, need for DBMS, users, architecture of DBMS, data models, views of data, data Independence, conventional data models & systems, ER model, attributes, relationship attributes, relationship set, generalization, aggregation, structure of relational Database and different types of keys, expressing M: N relation.

Module 2: Relational Model & Relational Database Design (18 hours)
Hierarchy model-network model-, Relational data model & relational algebra, Relational model concept, Relational model constraints, relational algebra, relational database language, Data definition in SQL, Views and Queries in SQL, Specifying constraints, indexes in SQL, Specifying constraints management systems, ER to Relational, Functional dependencies, Normalization, multi-valued and other kinds of Dependencies.

Module 3: File Structure (16 hours)
Overview of physical storage media, Magnetic disk, RAID, Tertiary storage, Storage access, File organization, Organization of records in files, Data dictionary storage,

Indexing and hashing; ordered index-B+ tree index files, -B Tree index files-static hashing Dynamic hashing-multiple key access

Module 4: Transaction and Concurrency control (12 hours)

Concept of transaction, ACID properties, serializibility, states of transaction, Concurrency control, Locking techniques, and Time stamp based protocols, Granularity of data items, Deadlock.

Module 5: Database system Architectures (12 hours)

System Architectures for DBMS, system catalog information in Oracle, Object Oriented Database, Distributed Data Bases, Parallel Database, New Applications,

References

1. Avi Silberschatz,Henry F. Korth, S. Sudarshan,|| Database System Concepts—, *Fifth Edition*, McGraw-Hill

2. Ramez Elmasri, Sham Navathe, "Fundamentals of Database Systems", Fifth edition,Pearson education

3. Raghu Ramakrishnan, Johannes Gehrke ,||Database Management systems||, Third Edition,(McGraw-Hill)

MSCIT2P6 VISUAL PROGRAMMING LAB

Practical to be chosen from the entire syllabus.

MODULE I

VB- Basic concepts – GUI concept – Concept of Event- driven programming, The Visual Basic IDE.

MODULE II

Programming Elements- Datatypes – Constants- Variables- Operators- User defined datatypes – comments – arrays- dynamic arrays- strings- Logic statements- Conditional constructs(if/then, Select- Case),Iteration(Do Loop, For Loop, Exit,Stop & End)- Functions & Subroutines- Arguments- By val Vs By Ref parameters- Optional arguments- Module Basics, debugging Tools.

MODULE III

Forms- Controls- Control Arrays.- Menu- Menu Editor, SDI- MDI Applications.

Database Concepts- Visual data manager,The Data Control, ADODC, Data Grid Control.

MODULE IV

Reports using crystal reports, Data Environment- Reports using Data Reports.

REFERENCES

1. Mastering Visual Basic 6.0, Evangelous Petroutso , BPB Publishers
2. Guide to Visual Basic 6.0, Peter Norton,
3. VB 6 How to Program, Deitel & Detiel, T.R Nieti ,Pearson Education.
4. Programming MS VB6, Francesco Balena, WP Publishers & Distributors (p) Ltd. South Asian Edition