SYLLABUS FOR MASTER OF COMPUTER APPLICATION – LATERAL ENTRY  
(MCA- LE)  

FIRST YEAR  

MCA 11 Computer Graphics  

Block 1 : Graphics Overview – Applications of Computer Graphics – Video Display Generation –  
Input Devices – Hard Copy Output Devices – Graphics System Software-Output Primitives :  
Circle generation Algorithms – Drawing Ellipse – Other Geometric Shapes – Region Filling  
Techniques  

Block 2 : 2D Transformations : Introduction - Two Dimensional Transformations:  
Transformation Principles – Basic Transformation – Matrix Representation – Composite  
Transformation - Two Dimensional Viewing and Clipping : Viewing Transformations – Windows  
and view ports – Aspect Ratio – Clipping and Shielding : Point Clipping – Line segment clipping  
– Convex Polygon clipping – Sutherland Hodgman Algorithm.  

Block 3 : 3D Transformations : Concepts – Basic Transformations : Translation, Scaling,  
Rotation and Mirror Reflection – Matrix Representation – Composite Transformations-Three  
Dimensional Viewing and Clipping : Viewing Process – Three Dimensional Viewing : Specifying  
Projection Plane and view volume – Clipping: Clipping against a finite view volume – Cohen  
Sutherland Algorithm – Constructing a three dimensional view – Hidden Surface Algorithm :  
Depth Comparison – Z-Buffer Algorithm  

Block 4 User Interface Design : Introduction - Components of User Interface – The User’s  
Model – The command Language – Styles of Command Language – Information Display –  
Feedback – Examples.  

Reference Books :  

1. Interactive Computer Graphics by M. Newmann and F. Sproull, McGraw Hill  
MCA 12 Design and Analysis of Algorithms


Reference Books:

1. Introduction to the Design and Analysis of Algorithms by S.E. Goodman and S.T. Hedetniemi.
3. Algorithms and Data Structures by Niklaus Wirth, PHI.


Reference Books:

MCA 14 Communication Skills


Reference Books:

1. Organizational Communication by M.D. Jitendra, Rajat Publications.
**MCA 15 Computer Networks**


Reference Books:

1. Computer Networks by Andrew S. Tannenbaum, PHI.
2. Computer Networks by Uless Black, PHIE.
**MCA 16 Operations Research**


Reference Books:

1. Hamdy A.Taha  
   Operations Research An Introduction  
   Macmillan publishing company (1982)

2. Don.T.Philips, A.Ravindran, James.J.Solberg  
   Operations Research – Principles and practice  
   John Wiley & sons (1976)

**MCA 17. Operating Systems**


Reference Books:

1. Operating System Concepts by Silberschatz and Galvin, Addison Wesley
2. Operating system Design and Implementation by Andrew S. Tanenbaum – PHI

MCA 18 Object Oriented Analysis and Design

objects-Classes and Objects: The nature of the class – Relationship among classes – The Interplay of classes and Objects - On building quality classes.


Reference Books :

1. Object Oriented Analysis and Design by Grady Booch, Addison Wesley
2. UML Distilled by Martin Fowler, Kendall Scott, Addison Wesley
MCA 19 Internet Programming


Reference Books:

1. Web programming Unleashed by Bob Breedlove et.al, Sams.net publishing.
3. Internet Millenium Edition, Complete Reference by Young, TMH.
4. HTML The complete Reference by Powell, TMH.
**MCA 20 Visual Programming**


Reference Books:

1. Windows Programming by Charles Petzold, Microsoft Press.
2. Visual Basic 6 from the ground up by Garry Cornell, TMH.
3. Visual C++ Programming by Steven Holzner, PHI.

MCA Lab – 3: Internet Programming and Graphics
MCA Lab – 4: Visual Programming and Accounting Package
THIRD YEAR

MCA 21 Relational Database Management System


Block 3: Oracle Database Fundamentals: Elements of SQL Language: Database Objects, Data Access SQL Commands, DML Commands – Oracle Queries – Basic Query, Using Expressions, Working with NULL values, Joining Multiple Tables in a Query, Selecting Distinct Values, Using Sub queries, Unions and Multiple part Queries.

Block 4: Table Handling and Embedded SQL: Table Creation: Create table statement - Privileges required - Describing Table Definitions - Modifying Tables - Renaming a Table - Copying another table - Dropping a Table – Other Database Objects - Reason for Database Objects - Indexes – Embedded SQL: Languages supported by Oracle Precompiler - Embedded SQL: Languages supported by Oracle Precompiler, Embedded SQL statements.

Reference Books:

1. An Introduction to Database System by C.J.Date, Addison Wesley.
2. Database system concepts by Silberschatz, Korth and Sudarshan, McGraw Hill.
3. An Introduction to Database Systems by Bipin C.Desai, Galgotia publications.
MCA 22  Client Server Technology


Block 2 : Components of Client Server Environment : Client Component : Components of client / server application – The client – Client service, request for services, RPC, windows services, Fax / print services, Remote boot services, other remote services – Utility embedding – Common request broker architecture (CORBA) – Server Component: The server - Detailed server functionality – The networking operating system – Novell network – LAN manager – IBM LAN server – Banyan VINES-PC network file services.


Reference Books :

2. Designing Enterprise Client/Server Systems by Beth Gold – Bernstein, David Marca PHI.
3. Client / Server Communications by Thomas S Ligon, TMH.
**MCA 23 Multimeda Systems**


Block 3: Object Oriented Multimedia: Object, Classes and related items – Multimedia Frameworks: Overview – Media classes – Transform classes format classes – component classes


Reference Books:

1. Multimedia In Practical Technology and Application by Judith Jeffcoate, PHI.
MCA 24 Distributed Computing


Block 3: Synchronization in distributed system: Clock Synchronization in distributed systems – Clock Synchronization – Multi exclusion – Electron algorithms – Atomic transaction – Dead lock distributed system – Thread usage an implementation of thread packages – Processor allocation.


Reference Books:
2. Modern Operating System by Tanenbaum A.S, PHI.
3. Distributed Operating Systems – Concepts and Design by Pradeep K.Sinha, PHI.
MCA 25 Network Programming

Block 1: Active X Scripting : Overview of Active X Scripting – Java Scripting – Stand-Alone Scripts – Active X Controls – Creating Active X Controls.

Block 2: Active X Documents : Introduction – Active X Document Architecture – Creating Active X Documents


Reference Book:

1. Visual C++ from ground up by John Paul Muller, TMH.
2. Visual Basic 6 Complete Reference by Noel Jerke, TMH.

MCA Lab – 5: Relational Database Management Systems

MCA 26: Project Work