NORTH MAHARASHTRA UNIVERSITY, JALGAON
Course Structure For MCM
(w.e.f. June 2004)

Semester -I
1.1 Elements of IT
1.2 Internet Fundamentals & Web Designing Tools
1.3 DBMS
1.4 Programming in C++
1.5 Accounting Information System
1.6 Practical

Semester -II
2.1 Software Design & Software Quality Mgmt.
2.2 Oracle/D2k
2.3 Linux
2.4 VC++
2.5 Communication Skill
2.6 Practical

Semester -III
3.1 Java
3.2 Essentials of Ecommerce. ERP & Supply Chain Mgmt.
3.3 Business Application & Data Processing
3.4 Data Structure
3.5 VB.Net
3.6 Practicals

Semester IV
4.1 Java Script, VB Script and ASP
4.2 Introduction j2EE , j2ME
4.3 Management Information System
4.4 Operation Research
4.5 Practical
4.6 Project and Viva- voce

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North Maharashtra University, Jalgaon
Master's Degree in Computer Application
M.C.M.
(W.e.f.June,2004)

1. The name of the Program shall be Master's Degree in Computer Management (M.C.M.)

2. The knowledge and skills required to plan ,design and build a complete Application oriented Software Systems are highly valued in all industry sectors including Business , Industry, Health, Education and the Arts. The basic objective of the Master's Programme in Computer Management (M.C.M.) is to provide to the country a steady stream of competent young men and women with the necessary knowledge ,skill and foundations for acquiring a wide range of information technology.

3. **The Job Opportunities are:**
   a) Many graduates begin their careers as junior programmers and after some experience are promoted to programmers, Software Engineers and System Analysts. Others seek entrepreneurial roles in the computer world as independent suppliers of systems and equipment, career opportunities exit in such areas as management, software and hardware sales. technical writing, training others on computers, consulting, software development and technical support.
   b) Application areas include transaction processing (such as order processing, airline reservations, banking systems,) accounting function, sales analysis, games, Forecasting and simulations database management ,decision support and data communications.

4. **Duration:**
   The MCM programme will be a full time four semester Master's Degree course in computer Management
   a) **The First Year** of the programme is a mix of computer related and general business courses. The Computer related courses introduce standard techniques of web page designing, and standard techniques of programming. The course also includes visual programing skills and communication skill. The course emphasises the study and orientation of bussisiness applications and computer programming .

b) **In the second year** the students are exposed to system development in the information processing environment, with special emphasis on management information system and general business application like accounting ,sales ,purchase, logistics , ERP and supply chain management . Also exposure to latest trends in IT networking and object oriented programing is provided.

c) The new curricular would focus on imparting computing skills and industry driven knowledge to the students.

4) **Eligibility:**

Any Graduates of any recognised university shall be eligible for admission to the MCM course.

5) **Number of lectures:**

There shall be atleast 30 lectures for each course in each semester. And 10 periods should be assiged for seminars of the tutorials for the internal assissement work .

6) **Practical training and Project Work.:**

a) At the end of fourth semester student will be examined in the course project work. The project must be undertaken by the students during the summer vacation. after the completion of Semester II but before the commencement of Semester III.

b) Project can be developed individually or by the team of not more then two students.

c) Students should take guidance form an intenal guide and prepare a project report on "Project Work" in 2 copies to be submitted to the Director of the Institute by 31st December.

d) The project should contain an introduction to the project, which should clearly explain the project scope in detail. Also Data Dictionary, DFDS,ERDs, file designs and a list of output reports should be included.

e) The project report will be duly assessed by the internal guide of the subject and marks will be communicated by the Director to the University.

f) The Project work will carry 40 Marks for internal assessment and 60 marks for external viva. The external viva shall be conducted by two external examiners.

g) Project work can be carried out in the Institute or outside with prior permission of the Institute.

7) **Assessment:**

1. The final total assessement of the candidate is made in terms of an . internal assessment and an external assessment for each course.

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a) For each paper,40 marks will be for Internal assessment and 60 marks External assessment.

b) The division of the 40 marks allotted to internal assessment of theory papers shall be on the basis of tutorial work and written test.

c) conducted by two External examiner appointed by the University which shall carry 60 marks and the internal assessment of practical examination conducted by the Institute which shall carry 40 marks.

d) The internal marks will be communicated to the university at the end of each semester but before the semester examination. These marks will be considered for the delaration of the final rsults.

e) In theory papers there shall be in all 8 questions out of which any five question shall be attempted by the candidate. For MIS Papers minimum weightage of 20 marks shall be given for case studies and 40 marks should be assigned for theory questions .

8. **Examination:**
Examination shall be conducted at the end of the semester i.e. during October/ November and also in April /May

9. **Standard of Passing:**
a) Every Candidate must secure 40% marks in each head of passing and in aggregate 50% marks

b) The passing marks for external examination will thus be 24 out of 60 and for and internal examinalton is out of 40

10. **Medium of Instruction :**
The medium of Instruction will be English.

11. **Clarification of Syllabus:**
It may be necessary to clarify certain points regarding the course . The B.O.S. shall study and clarify any difficulties form the Institutes.

12. **Revision of Syllabus :**
As the computer technology is changing very fast revision of the syllabus should be considered every 3 years.

13. **Teaching and practicals scheme.:**
Each session will be of 1 hours duration. Extensive use of audio-visual aids and field visits should form a major source for imparting knowledge.

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NORTH MAHARASHTRA UNIVERSITY, JALGAON
Details of Equivalence for New Course Structure For MCM
(w.e. from June 2004)

New Course	Equivalence	Old Course

Semester I

New Course	Old Course
1.1 Elements of IT	1.1 Elements of Information Technology
1.2 Internet Fundamentals & & Web Designing Tools	1.4 Internet Fundamentals Web Tools
1.3 DBMS	3.1 DBMS
1.4 Programming in C++	1.3 OOP using C++
1.5 Accounting Information System	2.2 Accounting Information System
1.6 Practical	1.6 Practical

Semester II

New Course	Old Course
2.1 Software Design & Software Quality Mgmt.	1.5 Software Engineering
2.2 Oracle/D2k	2.4 Oracle/D2k
2.3 Linux	2.1 Linux
2.4 VC++	1.2 Visual FoxPro
2.5 Communication Skill	2.5- Practicle Three More Chances
2.6 Practical	2.6 Practical

Semester III

New Course	Old Course
3.1 Java	4.4 Programming in JAVA
3.2 Essentials of Ecommerce; ERP & Supply Chain Mgmt.	3.3 Essentials of ERP .ECRM
3.3 Business Application & Data Processing	3.2 Business Application
3.4 Data Structure	2.3 Data Structure using C++
3.5 VB.Net	3.5 Visual Basic
3.6 Practicals	3.6 Practical

Semester IV

New Course	Old Course
4.1 Java Script, VB Script and ASP	4.3 SQL Server
4.2 Introduction j2EE , j2ME	4.2 Essentials of E-Commerce
4.3 Management Information System	4.1 Management Information System
4.4 Operation Research	3.4 Quantitative Technique
4.5 Practical	4.5 Practical
4.6 0Project and Viva- voce	4.6 Project and Viva- voce

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Computer Fundamentals:

Definition of Computer, Characteristics of Computer. Types of Computer
(Analog,Digital,Hyprid)
Block Diagram of Computer
Peripheral Devices:
Input Devices- Key board, Mouse
Output Devices -Console, Printer (Dot Matrix,Line,InkJet,Laser)
Secondary storage Devices: Magnetic Tape, Floppy Disk,CD-ROM

Data Representation :

Decimal Number, Binary Number, Conversion of decimal to binary number vice-
versa. EBCDIC,ASCII code

Computer Language :

Machine language, Assembly language, High-level language, Object Oriented
language, Language Processor.

Introduction to Microprocessors:

8085, 8086 microprocessor Architecture.

Operating System :

Definition of an operating system, Functions of an operating system.
Types(DOS,WINDOWS 98,WINDOWS NT, UNIX/LINUX)
Study of DOS commands :Internal, External (like MD, CD, COPY, DIR,
fdisk,format etc.) Programming Fundamental. Algorithm, flowchart, concept of
program .

Data Processing Techniques:

Concepts of File,record,field,data,information.
File organization -Sequential, index sequential ,random,direct,relative.
File handling function -Insertion,deletion,sorting ,merging,indexing,updating.

Concepts of Networking :

Introduction to computer networks ,essentials of computer
networks ,type of network (LAN,WAN,MAN,INTERNET)
Data Communication :Concept of communication ,means of communication ,OSi -7
layers ,topologies. protocols .TCP/IP

Introduction to Virus and Vaccines :

* Virus fundamentals. types of virus effects of viruses, available vaccines.

References :

Fundamental of computers: V.Rajaraman.
Principle of Digital Electronic : Malvino,Leach
Information Technology (O level): V.K.Jain
Teach yourself :The Internet in 24 hours :Techmedia
Computer and Commonsense :Hunt,Shalley

NORTH MAHARASHTRA UNIVERSITY JALGAON
MCM
Sub : 1.2   Internet Fundamental and Web Designing Tools
(W.e.f June,2004)

Concepts of Networking LAN, MAN, WAN
Basic requirement for internet
Modems, Browsers, gateways,bandwidth,leased lines,ISP,voice mail
domain address types
TCP/IP setting for internet
Internet Security :Firewalls
Mail services
HTML
Web Designing Fundamentals
Introduction to HTML ,Internet Protocols, Communication on the Internet,URLS in HTML
Document structure Elements in HTML
Block Formatting Elements(Font,Color,Size)
MARQUEE Elements
List Elements
Form Elements
Input Elements, select Elements, Option Elements, Character formatting,
Information type Elements
Introduction to Table Elements
BORDER
CELLSPACING
ALIGN
BGCOLOR
Table and Style Sheets
Introduction to Frames and Dynamic Documents

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Introduction to Web Publishing
Interface Design
Establishing Links
Page Design
Uses of GIF and JPEG Files
Creating a simple Home Page and Site

NORTH MAHARASHTRA UNIVERSITY, JALGAON
MCM
Sub : 1.3 DBMS
(W.e.f.June, 2004)

1) **Introduction** :-
   1.1   Advantages and Limitations of DBMS
   1.2   View of Data
   1.3   Database users and Administrator.

2) **Modeling Techniques** :-
   2.1   Different types of Models
   2.2   **Entity Relationship (E-R) Diagram**
       2.2-1   Basic Concept
       2.2-2   Design Issues
       2.2-3   Mapping Constraints
       2.2-4   Super Key, candidate key, foreign key, Primary key.
           Secondary key

   2.3   **Hierarchical Database**
       2.3-1   Basic Concept
       2.3-2   Tree Structure Diagram

   2.4   **Network Database**
       2.4-1   Basic concept
       2.4-2   Data Structure Diagram

3) **Relational Database**
   3.1   Introduction
   3.2   Codd's 12 Rules
   3.3   Concept of Domain, Tuple Cardinality.
   3.4   Comparison between Hierarchical, Network and Relational DB.
   3.5   Client and Server Architecture.

4) **Normalization**
   - 4.1 Advantages of Normalization
   - 4.2 INF-2NF-3NFBCNF rules with examples
   - 4.3 Anomalies

5) **Structured Query Language (SQL)**
   - 5.1 Introduction to DDL, DML
   - 5.2 Simple and Nested SQL Query with Aggregate Function such as (Text, Date) and Operators.
   - 5.3 Use of JOIN, BETWEEN, IN, EXISTS, GROUP BY HAVING clauses.

6) **Distributed Database**
   Concept, Data Distribution Techniques
   Concurrency Control
   Techniques, Locking Techniques, Time Stamp, Recovery Techniques, Recovery Concept.

8) **Security & Integrity**
   Concept of Object oriented Databases Management System.

TEXTBOOKS /REFERENCES

DATABASE SYSTEM CONCEPT by Henry Korth.
Desai B, "A Introduction to Database Concepts", Galgotia Publications.
Database Management By Leon

PRACTICALS:-
1. Creation of Simple Table
2. Insertion, Modify, Deletion Records.
3. Data Manipulation language using SQL
4. Using SQL clauses like GROUP BY, HAVING, IN BETWEEN, EXISTS
5. Nested queries using aggregate functions

NORTH MAHARASHTRA UNIVERSITY, JALGAON
MCM
Sub : 1.4 Programming in C++
(W.e.f June,2004)

1. **Introduction :**
   Difference between C, C++. The Object-Oriented Approach, Object Oriented Methodologies in Analysis. Characteristics of Object Oriented Languages, Classes. Object, Encapsulation, Inheritance, Polymorphism, C++ and C.

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2. **Structures :**
    An Introduction, to Structure, Features, Structures within Structures
    Enumerated Data Types.

3. **Function :**
    Simple function, passing Arguments to functions, Returning Values from
    Functions, Reference Arguments, Overloaded functions. Address of an
    overloaded function, passing an address of an overloaded function as an
    argument to another function. Inline functions, default Arguments, variables
    and Storage Classes.

4. **Objects And Classes :**
    A simple Class, Difference between class, structure and union in C++, C++
    objects, Constructors and Destructors Concept of ADT, Constant member
    function object as function Arguments Returning Objects from Functions,
    Classes, Objects and Memory, Static Class Data.

5. **Operator Overloading**
    Introduction, Overloading, Unary and Binary Operators Concatenating
    String, Comparison operators, Arithmetic Assignments Operators, Data
    Conversion-Between Basic Types, Between Objects and Basic Types.

6. **Inheritance :**
    Derived Class and Basic Class. David Class Constructors, Class
    Hierarchies. Public and Private Inheritance, Multiple Inheritance.
    Containership-Classes within Classes Inheritance

7. **Pointers :**
    The Delete and New Operator, Pointers to object, An Array of pointers to
    Pointers. Difference Between pointer and references.

8. **Virtual Functions :**
    Virtual Function, Pure Virtual Functions, Friend, Functions, Static
    Functions, The copy Constructor. Abstract Classes

9) **Introduction to Templates and Function with Templates.**
10. **Files and Stream : String I/O,Character I/O ,Command-line Argument**

TEXTBOOKS /REFERENCES
THE C++ PROGRAMMING LANGUAGE BY BJARANE STROUSTRUP.
OBJECT ORIENTED PROGRAMMING WITH C++ BY BALGURUSWAMY
PROGRAMMING WITH C++   BY JOHN R HUBBARD.

Sub : 1.5 Accountancy Information System
(W.e.f.June.2004)

1   Elements Of Accounting
Types of Accounts - Journal - Ledger - Trial Balance - Rectification of
errors - Bank Reconciliation

2   Closing and Adjustment entries for finalization of accounts -
Preparation of Adjusted Trial Balance-
Closing Journal entries and Adjusted Journal entries such as -
Stock Adjustment - Pre- Paid payable - Receivable -Received in advance -
Bad debts R.D.D. and Discount - Sale or Return -   Fire loss - Samples -
Goods in transit - Depreciation etc.\

**3   Depreciation Account - Fixed Installment Method, Sinking Fund
Method and Reducing Balance Method.**

4   Accounts of Non Trading concerns
- a.   Preparation of Income and Expenditure Account and Balance Sheet from Receipt and payment Account and vice-versa.
- b.   Preparation of Income and Expenditure Account and Balance Sheet from Trial Balance.
- c.   Preparation of Opening and Closing Balance Sheet from Income and Expenditure Account and Receipts and Payments Account (50 marks)

5   Design Input files and Data entry forms and formats of output reports for Accountancy and Information System

NORTH MAHARASHTRA UNIVERSITY JALGAON
MCM
1.6 Practical
(W.e.f.June, 2004)

DBMS
1.   Create a table and apply the constraints on a table like not null, check etc.
2.   Display a queries using group by function and date Functions
3.   Create a user and give the take a different grant of DBA .
4.   Create a table space grant to user import and export.
5.   Create and Manipulate View and Sequence .

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Object oriented Programming Using C++

1. Program for print "NMU" no. of times.
2. Program for prime nos in a given range.
3. Program for simple and compound Interest.
4. Program for converting given integer into word.
5. Program for checking given no is palindrome or not.
6. Program for compute first 30 terms of power of 3.
7. Program for designing class with book details and searching author in it
8. Program for designing class with bank account details and printing names and balances.
9. Program for operator overloading.
10. Program for multiple inheritance.
11. Program for implementing constructor.
12. Program for illustrate pointer and object.
13. Program for File handling

Internet Fundamentals and Web designing Tools

1. Demonstration of Internet Operating.
2. Web Page Design using simple HTML tags.
3. Implement lists in web page.
4. Use of Graphical files in web pages.
5. Create Tabular Document in Web Page.
6. Linking Document with its types.
7. Use of Frames and its attributes.
8. DHTML Tags with attributes.
9. Use of Cascaded Style sheets with SPAN and DIV tag.
10. Sample Web site.

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Introduction:
The evolving role of software, software Myths. Software Crisis, Software Processes, Software life cycle models : Waterfall, Prototype, Evolutionary and Spiral models, Overview of Quality Standards like ISO 9001

Software requirement Analysis and specification :
Problem analysis, DFD, Data Dictionary, ERD, software requirement and specification, Behavioral and non-behavioral requirements, Software Prototyping.

Concepts and Overview of S/w Quality Management:
Concepts of software quality, quality Attributes, software quality control and software quality assurance, Evolution of SQA, major SQA activities, major SQA issues, Zero defect software.

Software Quality Assurance:
The Philosophy of Assurance, the meaning of quality, the relationship of assurance to the software Life-Cycle , SQA Techniques.

Tailoring the software quality assurance program:
Reviews, Walkthrough, Inspection, and Configuration Audits.

Software Design:
Cohesion and Coupling, Classification of Cohesiveness and Coupling, Function Oriented Designing Object Oriented Designing, User Interface Designing.

Software Testing:
Software process, Functional testing, Equivalence class testing, Decision table testing, Cause effect graphing, Structural testing : Integration and system testing, Debugging, testing tools and standards.

Software Maintenance:
Management of maintenance, Maintenance process, Maintenance Models, Reverse Engineering,Software Configuration Management, Documentation.

Reference:

1. R.S. Pressman , "Software Engineering- A practitioners approach ", 3rd ed. , McGraw Hill Int. Ed., 1992.
2. K.K.Aggarwal and Yogesh Sing. "Software engineering", New Age International, 2001.
3. Robert Dunn , "software quality concepts and plans". Prentice- Hall, 1990.
4. Alan Gillies, "software quality, Theroy and Management", Chapman and Hall, 1992.
5. R Fairley. "Software Engineering Concepts". Tata McGraw Hill , 1997.
6. P.Jalote, "An Integrated approach to software engineering", Narosa. 1991.

NORTH MAHARASHTRA UNIVERSITY JALGAON
MCM
2.2 ORACLE/D2K
(W.e.f. June,2004)

SQL

Introduction ,Data types in oracle - operators, Working with table, Introduction to DML, TCL,DDL,DCL,Nested table. Varray,object table Integrity ontraints,Function in Oracle, Numeric Function, Character Function, Date function Conversion Function, Group Function

Working with Multiple Tables

Set Operators, Joins, Inner joins,Equi, Non Equi, Self joins, Outer Joins,

Sub Queries and Database Objects

Sub Queries Using Correlated Queries View , Index Partition, Sequence, Cluster.Synonyms,Materialized View

Locks

Locks in Oracle, Concept of Locking Shared Locks. Shared Update Locks, Dead Locks

PL/SQL

Introduction,PL/SQL Blocks ,Advantages of PL/SQL ,Control Structure ,Nested Blocks

Cursor

Implicit Cursors ,Explicit Cursor ,Composite Data Type ,Table and records

Triggers
Types of trigger ,Enabling & Disabling ,Database trigger

Introduction of LOBS
CLOB,NCLOB,BFILE,BLOB

Commonly Used Tools of Oracle
WEBDB,TKPROF, EXPORT, IMPORT

Developer 6i

Introduction
Working with the Form Developer Environment, Working a Basic Form Module Working With Data Blocks And Frame Running the Form Developer Application

Data Blocks
Data Block wizard, Creating Block Manually, Base Table block and control block, Master Details Blocks,

Working with GUI Controls
Working with Text Items, Creating Additional, Input Items, Check Box, Radio Button, List Item, Creating Non Input Items Display Item, Push Buttons, Label and Boiler Plate Graphics

Record Group and LOV
Working with Record Groups ,Creating LOV's, LOv's Wizard ,LOv Properties

EDITORS AND ALERTS
Types of Editors, Alerts, Properties

Property Class and Visual Attributes,
CREATING POPUP, MENU, TOOLBAR, TRIGGER, Trigger Validation

REPORT
Design and Running Report, Parameter Report , Group Report, Matrix Report, Tabular Report.

NORTH MAHARASHTRA UNIVERSITY JALGAON
MCM
2.3 Linux
(W.e.f.June, 2004)

Linux fundamentals . History, Linux as an operating system. Linux as an multitasking, multi-user operating system. Applications , distributions, Installing Linux. Comparison between Linux, Unix and DOS

X-Windows : Overview, Comparison of Microsoft Windows Vs X-Windows, X-server. Windows managers, Motiff, GNOME panel Xterm, Utilities in X-Windows.

K Desktop Environment (KDE): Concepts of KDE, installing KDE. Browsing th file system. Configuring KDE, Using KDE utilities.

Shell : Concepts of Shell (sh). C Shell (csh). Bourne again Shell (bash), Korn Shell (Ksh), setting environment variables in bash.

Shell Programming : Overview of Shell programming, common Linux commands like Cat, echo, grep, find. file, fdisk, free, kill. lpd. mkfs, passwd, mv. ls, paste, ping, ps, rm dir,rsh, shutdown , sort. su. tail. tar. pwd, cd. cat, clear, more, less, vi, sed etc.

Working with files : File operations like copy, move, create. delete, rename,

Awk programming : Introduction, general structure. Begin and End statement, comments, Keywords, identifiers, operators, input records and fields.

TCP/ IP fundamentals. TCP. UDP services and ports.

System administration : managing users, managing groups, system startup

Using Peripherals : Understanding Linux

Reference Books :
Mastering Linux- Arman danesh (BPB)
Linux unleashed- Techmedia Publication
Linux Configuration and Installation . Patrik Volkerding

Sub : 2.4 Programming in Visual C++
(W.e.f.June, 2004)

1. **Windows Concepts :-**
    Windows Environment, GUI. Multitasking Environment, Queued Input ,
    Windows messages and OOP's , Memory Management , Hardware
    Independence. Dynamic Link Libraries. Windows Programming Concept.

2. **Introduction to MFC and Visual C++ IDE**
    a.   Understanding the MFC class Hierarchy
    b.   Understanding How MFC Encapsulates WinMain
    c.   Overview of VC++ Integrated Development Environment

3. **MFC Application Architecture :**
    a.   MFC document / view Architecture
    b.   Non document / view Architecture Application
    c.   Implementing Dynamic and Static Splitter window

4. **OOPs and windows**
    Icon, Cursors. Message Boxes, Dialog Boxes, Fonts, Bitmaps, Pen ,
    Brushes.

5. **Windows Messages**
    Message Format, generating and responding to messages, message loop,
    procedure Oriented Windows Application

6. **MFC support and Graphical Output**
    Concepts such as Device context, Vector graphics and text, designing own
    classes

7. **Windows Controls**
    Buttons and scroll controls, list box , edit and combo box control, Image
    list, list view, tree View, toolbars, status bars

    Modal and Modaless Dialog boxes
    Common dialog boxes and Custom Dialog boxes (Modal and Modaless
    Dialog boxes)

References Books :
1. Visual C++ Programming - Y.P.KANETKAR
2 Windows programming with MFC - Jeff Prosis

NORTH MAHARASHTRA UNIVERSITY, JALGAON
MCM
Sub : 2.5 Communication Skills
(W.e.f.June,2004)

Unit 1   Introduction to Business Communication
1.1 Definitions
1.2 Need of communication
1.3 Process for communication
1.4 Methods of communication- Verbal and non -Verbal
1.5 Principals of communication
1.6 Patterns / Channels of communication- Formal and Informal
1.7 Barriers to effective communication

Unit 2   Written communication
2.1 Essentials of good letter writing
2.2 Structure of a Business Letter.
2.3 Forms of Layout
2.4 Job Application Letter
2.5 Sales Letter
2.6 Placing Orders
2.7 Claims and Adjustment Letters.
2.8 Collection Letters.

Unit 3   Oral Communication
3.1 Suitability and importance of oral communication
3.2 How to make Oral communication Effective.
3.3 Interviews-
   (a) Types of Interviews
   (b) How to prepare for an Interview
3.4 Speeches
   (a) Structure of a formal speech
3.5 Listening
   (a) Types
   (b) Process, Importance
   (c) Obstacles in good listening

Unit 4   Using Technology to Access and Share Information
4.1 Accessing electronic information
   CD ROM , Databases, Online databases, Online Information Services
4.2 The Internet

4.3 Sharing electronic information - Word processing, e-mail

4.4 The Telephone - Calling versus writing, voice mail, video conferencing, cellular Phones and paging devices.

References Books:

1. communication - C.S.RAYADU
2. Effective communication - Urmilla Rai
3. Business communication - k.k.Sinha
4. Business correspondence and report writing - R.C.SHARMA, KRISHANA MOHAN
5. Business communication - Balsurbramanyam M.

NORTH MAHARASHTRA UNIVERSITY ,JALGAON
MCM
Sub : 2.6 Practical
(W.e.f.June, 2004)

VC ++

1. Create a simple window with desired size and Display a text in a center.
2. Draw a Line and Rectangle in a window.
3. Use more than one brush in a program to do drawing.
4. Fill the background of the Client area with a bitmap
5. Use different fonts for writing a text in the window.
6. Create a menu using resource editor and load a menu in a window.
7. Create a toolbar and load toolbar.
8. Generate Status bar and show the status of Caps lock, Num lock, Scroll lock and current Mouse co-ordinates in a status bar.
9. Create Push button, Check Box, List Box, Static control in a window.
10. Create a Dialog box in a center of the application window or center of the screen.

Oracle/ D2K

1. Design of Database ,Create table ,Insert a record, Update the data.
2. Write a SQL queries using string and date functions .
3. Write a PL/SQL block using cursor.
4. Write a PL/SQL block using Control statement and error handling sections.
5. Create Function.
6. Create Simple Data entry Form with Validation.
7. Create Master Detail data entry Form.
8. Design Simple Report.
9. Design Master detail Report.
10. Design Matrix Report.

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Linux

1. Write a shell script, which accept username as input if the user has log in say "Hello" to him.
2. Write a Shell Script, which print names of files in current working directory in alphabetical order.
3. Write a Shell Script to print Statistical Report for the current directory.
4. Write a Shell Script, which will display contents of file in ascending order.
5. Write a program to create a file "result" using "stud","marks","rollno" with cut and paste command.
6. Write a script to print a file with odd and even pages separately.
7. Write a program to find out GCD of two number.
8. Program to generate first twenty terms of fibonacci series
9. Write a shell script for file name message as per time
10. Program to determine the given no is positive or negative or zero.
11. Write a awk program to print all files names having same no. of characters.
12. Create "Student " file and print Rollno and Name , Print list of student who complete their project . Print the oldest student name.
13. Create "Student " file and print the list of student who have taken mcm course. Average age of student .Youngest student name.
14. Print the File In reverse order of records
15. Print the number of empty lines in the files

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