FACULTY OF SCIENCE

SYLLABI

FOR

M.Sc. INFORMATION TECHNOLOGY
(SEMESTER SYSTEM)

SESSION 2011-2012

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OUTLINES OF TESTS

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Paper Name</th>
<th>Theory Lectures</th>
<th>Univ. Exam Marks</th>
<th>Int. Ass. Marks</th>
</tr>
</thead>
</table>

**FIRST YEAR (SEMESTER –1)**

MS-01  Advance JAVA Programming Language  6  80  20
MS-02  Interactive Computer Graphics  6  80  20
MS-22  Software Engineering & Management  6  80  20
MS-04  Algorithm Design and Analysis  6  80  20
MS-05  Minor Project  Based on MS 01  6  80  20
MS-06  Minor Project  Based on MS – 02 & MS – 04  6  80  20

**FIRST YEAR (SEMESTER –2)**

MS-23  Operating System  6  80  20
MS-08  Electronic Commerce and Tools  6  80  20
MS-09  Artificial Intelligence and LISP  6  80  20
MS-28  Trends in Computing  6  80  20
MS-27  Seminar  2  -  50
MS-24  Minor Project  Based on MS – 08  6  80  20
MS-25  Minor Project  Based on MS – 09  6  80  20
### SECOND YEAR (Semester -3)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Practical</th>
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<tr>
<td>MS-26</td>
<td>Software Testing and Quality Assurance</td>
<td>6</td>
<td>80</td>
<td>20</td>
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<tr>
<td>MS-12</td>
<td>Visual C++ Programming</td>
<td>6</td>
<td>80</td>
<td>20</td>
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<tr>
<td>MS-13</td>
<td>Linux Administration</td>
<td>6</td>
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<td>MS-14</td>
<td>Systems Approach to Management and Optimization Techniques</td>
<td>6</td>
<td>80</td>
<td>20</td>
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<td>Seminar</td>
<td>2</td>
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<td>MS-19</td>
<td>Minor Project Based on MS – 12</td>
<td>6</td>
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<td>MS-20</td>
<td>Minor Project Based on MS – 13</td>
<td>6</td>
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### SECOND YEAR (Semester -4)

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<tr>
<td>MS-21</td>
<td>Major Project</td>
<td>400</td>
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The project period will be of 6 months duration. The project will involve development of application/system software in industrial/commercial/scientific environment.
GUIDELINES FOR SUBMISSION OF PROJECT REPORT (MS-21)

The report should consist of the following:

- Cover page including Project title, Name of the student, Name of the Department and Names of the Project Guides (both External and Internal).
- Acknowledgements.
- Certificates from company and department duly signed by external guide, Principal and internal guide.
- Contents with page numbers.
- Introduction (includes background and application or importance of the project)
- Objectives
- System Analysis

System Feasibility study
- Software requirement specifications
- Design with system flowcharts and input/output design.
- Implementation and Testing
  - Hardware and software used
  - Listing of well commented programs with result/output or detailed algorithms with input and output.

Further scope of the project
- Bibliography
- Appendices (any other information related to project)

Each student should observe the following norms while submitting the synopsis/thesis for the Project:

(a) Use both sides of the paper instead of only single side.
(b) Use one and half interline spacing in the text (instead of double space)
(c) Stop using a blank sheet before the page, carrying figure or table.
(d) Try to insert figure/table in the text page itself (instead of using a fresh page for it, each time.)

Students must consult/inform the internal guides regarding the progress of their work at least once in 20 days. It is the duty of the student to be in touch with his internal guide. The student must prepare 5 copies of the report including one copy for self. The remaining four are to be submitted before 31st May every year as per the following:

1. Main Library
2. Department Library
3. Internal Guide
4. Company

One softcopy of the work is to be submitted to the concerned head of the department/institution along with the report. The student must present his/her work in 15 minutes mainly focusing on his/her contribution with the help of slides followed by demonstration of the practical work done. The project Viva will be completed before 15th June every year. Exact dates will be informed before 31st May every year.

An external examiner, internal examiner and the internal guide will conduct project viva.
FIRST - SEMESTER

Objectives: After completing this course, they

1) Can become entrepreneurs
2) Can go for higher studies
3) Can be employed in middle level industry sector both of IT and general

Paper Code : MS – 01
Paper Title : Advanced JAVA Programming Language.
Maximum Marks : 80 Number of Lectures : 90
(45 minutes duration)

Objectives: This course enables students to learn advance d features of JAVA such as JDBC and Swings.

Note:

i. The Question Paper will consist of Four Sections.
ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt ONE question from each Section and the Compulsory question.
iv. All questions carry equal marks unless specified.

SECTION - A

1. Review of Java Basics : Features, environment, class, inheritance, package, interface, applets, AWT, exception handling, multithreading, files.

2. Swing : Features, components, swing vs AWT, swing containers, controls, using Dialogs, sliders, progress bars, tables, creating user interface using swing.

   (No. of Lectures : 22)

SECTION - B

3. Java Database Connectivity : Connectivity model, Java. SQL package, JDBC Exception classes, Database connectivity, Data manipulation and navigation.

4. Java RMI : Distributed object technologies, RMI architecture, creating RMI applications.

   (No. of Lectures : 23)

SECTION - C

5. Java Servlets : Servelets vs CGI, Servlet lifecycle, creating and running servlets.


   (No. of Lectures : 22)
SECTION - D

7. Java Beans: Component architecture, what are Beans, Advantages of Beans, Bean Developer kit (BDK), JAR files, introspection, developing Beans, Using Bound properties, The Java Beans API.

(No. of Lectures: 23)

REFERENCES:

<table>
<thead>
<tr>
<th>No.</th>
<th>Author</th>
<th>Year</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Schildt, Herbert</td>
<td>1998</td>
<td>The complete Reference Java 2, TMH</td>
</tr>
<tr>
<td>3.</td>
<td>Keogh, James</td>
<td>2002</td>
<td>J2EE: The complete Reference</td>
</tr>
</tbody>
</table>

Paper Code    : MS - 02
Paper Title   : Interactive Computer Graphics
Maximum Marks : 80
Number of Lectures : 90
(45 minutes duration)

Objectives: This course enables students to understand graphics hardware and various 2D and 3D algorithms.

Note:

i. The Question Paper will consist of Four Sections.
ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Section and **ONE** compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt **ONE** question from each Section and the Compulsory question.
iv. All questions carry equal marks unless specified.

SECTION - A

1. 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, Color-display techniques (shadow mask and penetration CRT, color look-up tables, analog false colors, hard-copy color printers). Display Discription; Screen coordinates, user co-ordinates; Graphical data structures; Display code generation; Graphical functions;

(No. of Lectures: 22)

SECTION - B

2. The view algorithm, Two-dimensional transformation, Line-drawing, Circle drawing algorithms.
3. Interactive Graphics: Pointing and positioning devices (cursor, lightpen, digitizing tablet, the mouse, track balls), Interactive graphical techniques;
Positioning, (Elastic or Rubber Band lines, Inking, zooming, panning, clipping, windowing, scissoring),

(No. of Lectures : 23)

SECTION - C

4. Mouse Programming, Turbo-C, Graphic Languages: Primitives (Constants, actions, operators, variables), plotting and geometric transformations, display subroutines, Concept of Animation, Saving, Loading and Printing graphics images from/to disk. Animated algorithms for Sorting, Towers of Hanoi etc.

(No. of Lectures : 22)

SECTION - D

5. 3-D Graphics: Wire-frame, perspective display, Perspective depth, Projective transformations, Hidden line and surface elimination, Transparent solids, Shading.

6. Programming Projects: Two dimensional Transformations, 3-dimensional transformations, Interactive Graphical Techniques. GUI. Turbo C/C++ (Graphics Routines) is to be used as the standard teaching tool.

(No. of Lectures : 23)

REFERENCES:

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<tr>
<th>No.</th>
<th>Author</th>
<th>Title</th>
<th>Publisher</th>
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</thead>
</table>
Objectives: This course enables students to understand Software Configuration Managements Tools and Techniques.

Note:

i. The Question Paper will consist of Four Sections.
ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt ONE question from each Section and the Compulsory question.
iv. All questions carry equal marks unless specified.

Prerequisite: Computer Organisation & Assembly Language Programming, problem Solving and C-Programming.

SECTION – A

2. Software Specifications: Software requirements, Definition, Software requirements specifications (SRS), Components of SRS.

   (No. of Lectures : 22)

SECTION – B


   (No. of Lectures : 23)

SECTION – C
5. Software Metrics: Role of Metrics and Measurements, Types of Software Metrics.
6. Software design: Objectives, Principles, Concepts, Design Process, Design Methodologies, Structured design, Modular design, Object oriented design, User-interface design, Features of a Modern GUI, Windows, icons, error messages etc.

   (No. of Lectures : 22)

SECTION – D
(No. of Lectures: 23)

SUGGESTED READINGS

<table>
<thead>
<tr>
<th>No.</th>
<th>Author</th>
<th>Year</th>
<th>Title and Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fairley, R.E.</td>
<td>1985</td>
<td>Software Engineering concepts, McCraw-Will.</td>
</tr>
<tr>
<td>2</td>
<td>Lewis, T.G.</td>
<td>1982</td>
<td>Software Engineering, McCraw-Hill.</td>
</tr>
<tr>
<td>4</td>
<td>Hibbard</td>
<td>1978</td>
<td>Constructing Quality Software</td>
</tr>
<tr>
<td>7</td>
<td>Sommerville, I.</td>
<td>1986</td>
<td>Software Engineering, Narosa Publ. House</td>
</tr>
<tr>
<td>9</td>
<td>Pressman, R.</td>
<td>2010</td>
<td>Software Engineering.</td>
</tr>
<tr>
<td>10</td>
<td>Ghazzi, Carlo.</td>
<td>1995</td>
<td>Fundamentals of Software Engineering, PHI.</td>
</tr>
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</table>

Paper Code: MS - 04  
Paper Title: Algorithm Design and Analysis  
Maximum Marks: 80  
Number of Lectures: 90  
(45 minutes duration)  
L 6  P 4

Objectives: The course enables students to understand different algorithmic techniques and their analysis.

Note:
i. The Question Paper will consist of Four Sections.
ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Section and **ONE** compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt **ONE** question from each Section and the Compulsory question.
iv. All questions carry equal marks unless specified.

SECTION - A

1. **Review of Algorithms and Data Structures**: Analysing algorithms; Stacks and Queues, Trees, Heaps and Heap sort; Sets, Find and Disjoint set union, Graphs,
Hashing. Example of recursive programs; Converting recursive algorithms into iterative ones; Analysing algorithms; Big Oh and Asymptotic notations.

2. **Divide and Conquer**: General method, Binary Search, Merge sort, Quick sort, Selection sort, Strassen's matrix multiplication and analysis of these problems.
   
   (No. of Lectures – 22)

**SECTION - B**

3. **Greedy Method**: General Method, Knapsack problem, Job sequencing with dead lines, Minimum spanning Trees, Single source Shortest path; analysis of these problems.

4. **Dynamic Programming**: General method, Optimal Binary Search Trees, 0/1 Knapsack, the travelling Salesperson problem.
   
   (No. of Lectures – 23)

**SECTION - C**

5. **Backtracking**: General method, 8 queen's problem, Graph colouring, Hamiltonian cycles.

6. **Branch-And-Bound**: Method, 0/1 Knapsack and Travelling Salesperson problems, Efficiency considerations.
   
   (No. of Lectures – 22)

**SECTION - D**


   
   (No. of Lectures – 23)

**REFERENCES**:

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SECOND SEMESTER

Paper Code    :  MS - 23
Paper Title    :  Operating System
Maximum Marks : 80
Number of Lectures : 90
(45 minutes duration)

L      P
6      8

Objectives : To understand the concepts of Operating System including dealing with deadlocks & file management.

Note :
    i. The Question Paper will consist of Four Sections.
    ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Section and **ONE** compulsory question of short answer type covering whole syllabi.
    iii. The students are required to attempt **ONE** question from each Section and the Compulsory question.
    iv. All questions carry equal marks unless specified.

SECTION – A
1. Introduction to Operating System : OS, types of OS, Functions/Operations of OS, History of OS, Users services/jobs.
2. Memory Management (I) : Address protection, segmentation, virtual memory, paging, page replacement algorithms,
   (No. of Lectures : 22)

SECTION – B
3. Memory Management (II) : cache memory, hierarchy of memory types, associative memory.
4. Support for concurrent process : Mutual exclusion, shared data, critical sections, busy form of waiting, lock and unlock primitives, synchronization.
   (No. of Lectures : 23)

SECTION – C
   (No. of Lectures : 22)

SECTION – D
   (No. of Lectures : 23)
### SUGGESTED READINGS

<table>
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<tr>
<th></th>
<th>Author</th>
<th>Title</th>
<th>Publisher</th>
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<tbody>
<tr>
<td>1.</td>
<td>Bach, M., 1986</td>
<td>Design of the UNIX operating systems</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Richie, C. 2001</td>
<td>Operating System</td>
<td></td>
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</tbody>
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**Paper Code** : MS - 08  
**Paper Title** : Electronic Commerce and Tools  
**Maximum Marks** : 80  
**Number of Lectures** : 90  
**(45 minutes duration)**  
**L**  
**P**  
6 4

**Objectives** : This course enables students to know fundamentals of Electronic Commerce applications and issues.

**Note** :

i. The Question Paper will consist of Four Sections.

ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Section and **ONE** compulsory question of short answer type covering whole syllabi.

iii. The students are required to attempt **ONE** question from each Section and the Compulsory question.

iv. All questions carry equal marks unless specified.

**SECTION - A**

1. **Electronic Commerce Fundamentals**: Introduction to E-commerce and its advantages & disadvantages; Traditional vs E-Commerce; Growth of E-Commerce in India vis-à-vis Other Nations; Prospects and limitations in the growth of E-commerce in Indian context; E-Commerce Framework; The anatomy of E-commerce Applications; E-commerce consumer & organization applications.

(No. of Lectures : 22)

**SECTION - B**

2. Internet as a Network infrastructure for E-commerce; Architecture and components of Internet; Internet Services; ISPs at Local/National/Global Level; Domain Name Registration; Internet Administration; Internet Protocol Suite. Architectural Framework for E-Commerce; WWW as the architecture; Hypertext Publishing; Technology behind the web; Security behind the web.

(No. of Lectures : 23)
SECTION - C
3. Consumer oriented applications; Mercantile Process Model; Mercantile Model from the Consumer’s perspective; Mercantile Model from the Merchant’s perspective. Electronic Data Interchange(EDI) and its applications in business; Legal, Security and Privacy issues in EDI; EDI software implementation; Internal Information Systems; ERP and Supply-Chain Management; The corporate digital library; Advertising and marketing on the internet; On-demand education and Digital copyrights.

(No. of Lectures : 22)

SECTION - D
4. Issues in E-commerce: The legal and policy environment of E-Commerce; Intellectual Property, advertising and consumer protection; Copyright Law; Patent Law; Network Security and Firewalls; Client-Server Network Security Threats; Data and Message Security; Encrypted Documents and E-mail; Principles of digital cryptography; Symmetric and Asymmetric Cryptosystems; Cryptographic standards e.g. Data Encryption Standard(DES); Digital Signatures; Public Key Certificates;

(No. of Lectures : 23)

REFERENCES

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Paper Code : MS - 09
Paper Title : Artificial Intelligence and LISP.
Maximum Marks : 80
Number of Lectures : 90
(45 minutes duration)
L   P
6   4

Objectives: The course enables students to understand Artificial Intelligence techniques and also enables to learn the Artificial Intelligence Language LISP.

Note:

i. The Question Paper will consist of Four Sections.
ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt ONE question from each Section and the Compulsory question.
iv. All questions carry equal marks unless specified.
SECTION - A


   (No. of Lectures: 22)

SECTION - B


4. **Gameplaying**: Minimax Search Procedure, Adding Alpha-Beta Cutoffs

   (No. of Lectures: 23)

SECTION - C


6. **Natural Language understanding** and Processing: Complexity of the problem, Syntactic processing, Semantic Analysis, Pragmatic processing, Introduction to Perception and Action.

   (No. of Lectures: 22)

SECTION - D

7. **Introduction to LISP**: Symbolic expressions, creating, Appending and modifying lists, Defining functions, Predicates, Conditionals, Recursion, Iteration, Lambda Expressions, Use of Advanced functions like MAPCAR, REMOVE-IF, COUNT-IF.

   (No. of Lectures: 23)
## REFERENCES:

| 2. | Russel, Stuart; & Norviig, Peter, 2007 | Artificial Intelligence; a modern Approach published by Person Education (Singapore) Pvt. Ltd. Indian Branch, 482 F.I.E. Patparganj, Delhi - 110092, India. |
| 7. | Bharti & Chaitany, 2005 | Natural Language Processing, PHI. |
Objectives: This course enables students to be familiar with emerging technologies as Parallel Computing, Mobile Computing and intelligent Agent Technologies.

Note:

i. The Question Paper will consist of Four Sections.

ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.

iii. The students are required to attempt ONE question from each Section and the Compulsory question.

iv. All questions carry equal marks unless specified.

SECTION - A

1. Parallel Computing: Parallel virtual machine(PVM) and message passing interface (MPI) libraries and calls. Advanced architectures. Today’s fastest computers and Supercomputers.

2. Data compression technology: Introduction, space/storage compression, Lossy versus lossless data compression, Graphics Metafiles, Classes of data encoding techniques, GIF, PNG, JPEG and MPEG compressions

   (No. of Lectures: 22)

SECTION - B

3. Data Warehousing and data mining: characteristics of data warehousing, data modeling for data warehousing, steps to build a data warehouse, Applications of data mining, Association rules, classification, sequential patterns, clustering etc., commercial data mining tools

   (No. of Lectures: 23)

SECTION – C


   (No. of Lectures: 22)
SECTION - D

6. .NET – evolution : Need and perspective in current scenario, .net framework over view structural diagram. XML : An overview of XML, use of XML, integrity of XML with databases, XML as the .NET Meta language

(No. of Lectures : 23)

REFERENCES :

<table>
<thead>
<tr>
<th>No.</th>
<th>Author(s)</th>
<th>Title</th>
<th>Edition &amp; Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>M. Sasikumar, Dinesh Shikhare, P. Ravi Prakash, 2004</td>
<td>Introduction to Parallel Processing</td>
<td>PHI (for section A)</td>
</tr>
<tr>
<td>5.</td>
<td>Rahul Bannerjee, 2003</td>
<td>Internetworking Technologies: An Engineering perspective</td>
<td>PHI, 2003 (Chapters- 3 &amp; 4) (for sections C &amp; D)</td>
</tr>
</tbody>
</table>
THIRD SEMESTER

Paper Code    : MS - 26
Paper Title     : Software Testing and Quality Assurance
Maximum Marks : 80             Number of Lectures : 90
(45 minutes duration)

Objective: This course enable students to learn software testing process and tech. basics of concepts of Quality Assurance reliability & Conf. Management.

Note:

i. The Question Paper will consist of Four Sections.
ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt ONE question from each Section and the Compulsory question.
iv. All questions carry equal marks unless specified.

SECTION – A


(No. of Lectures : 22)

SECTION – B


(No. of Lectures : 23)

SECTION – C


(No. of Lectures : 22)
SECTION – D


(No. of Lectures : 23)

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<tbody>
<tr>
<td>1.</td>
<td>Doutsch, Wills, Hall, 1988</td>
<td>Software Quality Engineering: A total Technique and management Approach,</td>
</tr>
<tr>
<td>5.</td>
<td>William E. Perry, WILEY, 2006</td>
<td>Effective methods for Software Testing:</td>
</tr>
</tbody>
</table>

Paper Code : MS - 12
Paper Title : Visual C++ Programming
Maximum Marks : 80
Number of Lectures : 90
(45 minutes duration)

Objective: This course enables students to learn various features of VC++ program, db creation & app. Deployment.

Note:

i. The Question Paper will consist of Four Sections.
ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt ONE question from each Section and the Compulsory question.
iv. All questions carry equal marks unless specified.

SECTION – A


2. Visual C++ Programming
   Visual C++ ‘s Program Structure, Variables, data-types, basic I/O, selection statements, repetition statements, arrays, pointers, dynamic memory allocation, functions, recursion,
Visual C++ library of functions, inheritance, polymorphism, virtual functions, storing data in disk files, using disk files.

( No. of Periods : 22)

SECTION - B

3. Win32 architecture and the Windows GUI
The Win32 API, Architecture of a Win32 program, Elements of Windows GUI.

4. Windows Programming with MFC
MFC fundamentals: The structure and usage of the MFC, The application framework, MFC support for multithreading, MFC class categories, The document/view architecture, Handling window messages, Managing handlers with ClassWizard, Errors and error handling, MFC diagnostic functions and macros, Exceptions and exception handling.

( No. of Periods : 23)

SECTION – C

5. MFC and user interface programming: MFC classes and user interface elements, Commands and menus, Toolbars, Dialog bars and status bars, Creating dialog boxes, Standard windows controls and MFC classes, Dialog Data Exchange (DDX) and Dialog Data Validation (DDV), Using list boxes, Building an ActiveX control framework, MFC support for Context-sensitive help.

Viewing and Storing Data: Form views, Control views, Splitter windows, Handling multiple views.

(No. of Lectures : 22)

SECTION - D

6. Database Creation Programming in Windows
Data access with MFC: Introduction to data access, MFC database classes, Recordsets and transactions.
Developing database applications: Creating an ODBC application, Structure of a database application, Connecting the recordset to controls, Creating a joined recordset.
Querying the database: Customizing a query, Querydefs and parameterized, queries, Seek and Find functions.

7. Application Deployment
The Registry and application setup, Linking, MFC and DLLs.

(No. of Lectures : 23)

REFERENCES

<p>| | |</p>
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Objective: This course enables students to get familiar with Linux system, its commands, file & dir. system, shell program PERL prog and system admin.

Note:

i. The Question Paper will consist of Four Sections.

ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Section and **ONE** compulsory question of short answer type covering whole syllabi.

iii. The students are required to attempt **ONE** question from each Section and the Compulsory question.

iv. All questions carry equal marks unless specified.

**SECTION – A**

1. **Introduction to Linux**: What is Linux, Linux's History, Minimum System Requirements; Installing Linux: Working with Linux, Floppy-less Installation, Boot and Root Disks, Choosing Text or Graphics Installation, Setting up your Hard Drive, Formatting the Partitions, Setting up the Ethernet, Configuration X, Selecting packages to Install, Using LILO; Partitioning the Hard Disk: Linux Swap Space Partitions, Linux's fdisk, Enabling the Swap Space for Installation, Creating the Linux File-system partition, Using LILO

2. **Using Linux**: Starting and Stopping your Linux System, Linux Shutdown Commands, Login, Passwords, Creating a New Login, Logging Out; Trying out your new Login: Linux Error Messages, Search Paths; The who Command, Commands and Programs.

3. **Basic Linux Commands**: How Linux Commands Work, Command Options, Other Parameters, Input and Output Redirection, National conventions used to Describe Linux commands, Online help available in Linux, The Linux Man pages, Finding keywords in Man pages, The bash shell help facility; Wildcards: * and ?, Environment Variables, Process and How to Terminate them, The process status Commands: ps, The process termination command: kill, the su command, the grep command.

(No. of Periods: 22)

**SECTION - B**

4. **Using the File System**: Files Overview, Common types of files, filenames, Directories an Overview, Parent directories and sub-directories, The root directory, How directories are named, The home directory; Navigating the Linux file System: pwd command, Absolute and relative filenames; cd command, Creating and Deleting files: Cat, Creating Directories, Moving and Copying files, Moving and Copying with Wildcards, Moving Directories, Removing files and directories, Fear of Compression: The Zipless file, Important directories in the Linux file System: /, /home, /bin, /usr, /usr/bin, /usr/spool, /dev, /usr/bin, /sbin, /etc.

5. **File and Directory Permissions**: File and Directory ownership, User and ownership, Groups, Changing group ownership, File Permissions, UMASK Setting, Changing File Permission, Changing directory permissions; Bash: What is Shell? How the Shell gets Started, The most common Shells; The Bourne Shell: Command-line Completion,
Wildcards, Command History, Aliases, Input Redirection, Output Redirection, Pipelines
Shell, Prompts, Job control, Customizing bash, bash commands, bash variables.

(No. of Periods : 23)

SECTION - C

6. **Linux - tcsh**: An Introduction to tcsh, Command completion, Wildcards, Command History, Aliases, Input and Output Redirection, Pipelines, Prompts, Job Control; Key Bindings, Correcting Spelling Errors, Pre-commands, Change directory Commands, Monitoring Logins and Logouts, Customizing tcsh, tcsh Command Summary, tcsh variables.


8. **Editing and Typesetting**: Text Editors vi, The vi Editor, Starting vi, vi modes, Inserting Text, Quitting vi, Moving the Cursor, Deleting Text, Copying and Moving Text, Searching and Replacing Text, Setting Preferences.

(No. of Periods : 22)

SECTION - D


(No. of Periods : 23)

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Objective: This course enables students to be familiar with different types of Info systems, basics of DR and its practical problems.

Note:

i. The Question Paper will consist of Four Sections.

ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Section and **ONE** compulsory question of short answer type covering whole syllabi.

iii. The students are required to attempt **ONE** question from each Section and the Compulsory question.

iv. All questions carry equal marks unless specified.

SECTION - A

1. **Concepts of Computer Based Systems:**
   Data, Information, Information Systems, Model of computer based information system; Introduction to Management Information System, Decision Support System and Knowledge Based Systems

2. **Accounting Information System:**
   Characteristics, sample system, subsystems for filling customer order, order replenishment stock, performing general ledger processes; features and use of Accounting Information System Package-Tally.

3. **Marketing Information System:**
   Basic concepts, model, subsystems including Marketing Research, Marketing Intelligence, Product, Place, Promotion and Pricing subsystems  
   (No. of Lectures : 22)

SECTION - B

4. **Manufacturing Information System:**
   Model and subsystems including Accounting Information, Industrial Engineering, Inventory, Quality and Cost Subsystems

5. **Financial Information System:**
   Model and Subsystems including Forecasting, Funds Management and Control Subsystems.

6. **Human Resources Information Systems:**
   Model and Subsystems including human resources research, human resources intelligence, HRIS Database, HRIS output 
   (No. of periods: 23)
SECTION – C

7 Basics of Operations Research (OR):
Origin and Development of OR, Characteristics of OR, Models in OR, OR and Decision Making, Role of Computers in OR, Limitations of OR

8 Linear Programming: Mathematical Formulation, Graphical and Simplex method, Duality in Linear programming, Dual Simplex Method, The Revised Simplex Method, Sensitivity Analysis.

(No. of Lectures : 22)

SECTION - D

9 Special types of Linear Programming problems –Transportation and Assignment problems.


(No. of Lectures : 23)

REFERENCES


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