Bachelor of Technology (Information Technology)

Scheme of Courses/Examination

(w.e.f.: 2004-2005)

(5th Semester IT)

Sr. No.	Course No.	*Subject*	Teaching Schedule				*Examination Schedule* (Marks)				Duration of Exam (Hrs.)
			L	T	P	Total	Theory	Sessional	Practical	Total	
1.	IT-351	Web Design	3	1	-	4	100	40	-	140	3
2.	IT-353	Digital & Data Communication	4	1	-	5	100	40	-	140	3
3.	IT-355	Network Programming	4	1	-	5	100	40	-	140	3
4.	IT-357	Operating System	4	1	-	5	100	40	-	140	3
5.	IT-359	Multimedia & Virtual Reality	4	1	-	5	100	40	-	140	3
6.	IT-361	Web Design Lab	-	-	3	3	-	40	25	65	3
7.	IT-363	Digital & Data Communication Lab	-	-	2	2	-	25	25	50	3
8.	IT-365	Network Programming Lab	-	-	3	3	-	40	25	65	3
9.	IT-367	Multimedia & Virtual Reality Lab	-	-	2	2	-	25	25	50	3
10.	IT-369	Training Report						70		70	
TOTAL			19	5	10	34	500	400	100	1000	

IT-359

Multimedia & Virtual Reality

L	T	P		
4	1		**Theory:**	**100**
			Sessional:	**40**

UNIT-1

BASICS OF MULTIMEDIA TECHNOLOGY:

Computers,communication and entertainment,multimedia an introduction & emerging applications,framework for multimedia systems,multimedia devices, CD-AUDIO,CD_ROM,CD_I,multimedia presentation and authoring profeesional tools.

AUDIO, VIDEO AND IMAGE:

Digital representation of sound,transmission of digital sound, MPEG-Audio ,audio compression and decompression,brief survey of speech recognition and generation,audio synthesis,musical instrument digital interface,evaluating a compression system-redundancy and visibilility,video compression techniques,JPEG-image compression standards,MPEG-motion video compression standard-DVI Technology

UNIT-2

MULTIMEDIA FILE SYSTEMS AND INFORMATION MODELS

The case of multimedia information system,file support for continuous media-data models for multimedia and hyper media information ,multimedia presentation and authoring,current state of industry-design paradigms and user interface-barriers to widespread use,multimedia system service architecture,media stream protocol and services and window system,client control of continuous media,file system support,hyper applications

UNIT-3

MULTIMEDIA COMMUNICATION SYSTEMS:

multimedia services over the public network, requirements,architecture and protocols-applications-network services-network protocols-multimedia interchange:Quicktime movie file format(QMF)-MHEG(Multimedia and Hypermedia information and coding expert group)-format function and representation summary-real time interchange-Multimedia conferencing:teleconferencing systems.

Animation:

Introduction,Basic terminologytechiques,Motion graphics 2D & 3D animation.Introduction to MAYA(Animating tool):Fundamentals,Modeling:NURBS,Polygon,Organic,animation,paths &boxes,deformers,working with MEL:Basics &programming Rendering &special effects:shading &texturing surfaces,lighting, special effects.

UNIT-4

VIRTUAL REALITY:

Applications of multimedia,intellegient multimedia systems,desktop virtual reality,VR operating system,virtual environment displays&orientation making;visually coupled system requirements;intellegent VR software systems.

Books Recommended:

1. David Hillman,"Multimedia Technology&Applications",Galgotia publications.
2. John.F.Koegelbuford,Multimedia Systems,AWP,1994.
3. An Introduction,Villamil &Molina,Multimedia mc Milan,1997.
4.Multimedia:Sond &video,Lozano,1997,PHI(Que)

Reference Books:

1. Production,planning and delivery,Villamil & Molina,Que,1997
2.Multimedia on the PC,Sinclair,BPB

3.Multimedia in action by Jeff coate judith,1995,PHI
4.Multimedia System by Koegel,AWL.
Note:There will be 8 questions in all.Two questions will be set from each unit.Students are required to attempt five questions selecting at least from each unit.

IT-355 **Network Programming**

L	T	P		
			Theory:	100
4	**1**		**Sessional:**	**40**

Unit-1 Introduction to Java & Principles of Object Oriented Progamming:
Basic Concepts of OOP and it's Benefits. Application of OOP. The Creation of Java, Importance of Java for the Internet, Java's Magic: The Byte-code, Features of Java. Object-Oriented Programming in Java, Java Program Structure.
Defining Classes:
Defining of a Class, Definition of Methods, Constructors, Creating Objects of a Class, Assigning Object Reference Variables, The keyword "this" , Defining and Using a Class, Automatic Garbage Collection.
Arrays and Strings:
Arrays, Arrays of Characters, String handling Using String Class, Operations on String Handling Using. String Buffer Class.
Extending Class and Inheritance:
Using Existing Classes, Class Inheritance, Choosing Base Class, Access Attributes, Polymorphism, Multiple Levels of Inheritance, Abstraction through Abstract Classes, Using Final Modifier, The Universal Super class-Object Class.
Unit-2 Package & Interfaces:
Understanding Packages, Defining a Package, Packaging up your Classes, Adding Classes from a Package to your Program, Understanding CLASSPATH, Standard Packages, Access Protection in Packages, Concept of Interface.
Exception Handling:
The Idea behind Exceptions, Types of Exceptions, Dealing with Exceptions, Exception Objects, Defining Your Own Exceptions, Checked and Unchecked Exceptions.
Multithreading Programming:
The Java Thread Model, Understanding Threads, The Main Thread, Creating a Thread: extending Thread and implementing Runnable, Creating Multiple Threads, Thead Priorities, Synchronization, Deadlocks inter-thread communication, Deadlocks.
Input/Output in Java:
I/O Basic, Byte and Character Structure, I/O Classes, Reading Console Input, Writing to Console Output, Reading and Writing on Files, Random Access Files, Storing and Retrieving Objects from File. Stream Benefits.

Unit-3 Creating Applets in Java:

Applet Basics, Applets Architecture , Applet Life Cycle, Simple Applet Display Methods, Requesting Repainting, Using the Status Window, The HTML APPLET Tag, Passing parameters to Applets.
Networking:
Basics, Networking Classes and Interfaces, Using Java.net Package, doing TCP/IP and Datagram Programming by Server Socket and Socket Classes.
Java Data Base Connectivity(JDBC)
Database Connectivity- Relation Databases, JDBC API, Reusing Database Objects, Transactions, Advance Techniques.
Working with Windows:
AWT Classes, Window Fundamentals, Working with Frame, Creating a Frame Window in an Applet, displaying information within a Window.
Unit-4 Event Handling: Two Event Handling Mechanisms, The Delegation Event Model, The Event Handling Process, Event Classes, Sources of Events, event Listener Interfaces, Using the Delegation Event Model, Adapter Classes.
Java Servlet Programming:
Role and Advantages of Java Servlets in Web application Development.
HTTP Servlets- Introduction, page generation, server side includes, servlet chaining, java Server pages.
Server Life Cycle- Servlet Alternative, Reloading, Init and Destroy, Single Thread Model, Background Processing Last Modified times, synchronization, Persistent state capabilities.
Retrieving Information- Intialization Parameters, Methods of receiving Information about Client-server and clients request.
Sending HTML Information-Structure of Response, Sending a Normal Response, using Persistent Connection, HTML generation, Status Codes, HTTP headers, Error Handling.
Books Recommended:

1. Java-2 The complete Reference by Patrick Naughton and Herbertz Schildt, TMH.
2. Beginning JAVA 2 (JDK1.3 Edition), Ivor Horton, WROX Public.
3. Thinking in Java, Bruce Eckel
4. JAVA 2 UNLEASHED, Tech Media Publications.
5. JAVA 2(1.3) API Documentations.
6. "Programming with Java", By E Balaguruswamy.

IT-353
Digital and Data Communication

L	T	Theory	Sessional
4	**1**	**100**	**40**

Unit-1

Introduction

A communications model- Data communications – Data communication networking – Standards – Making organizations – Data Transmission:Concepts and terminology – Analog and Digital Transmission – Transmission impairments – Transmission media.

Data Encoding:

Digital data,Digital signals:Encoding schemes:NRZ-L,NRZ-I,Manchester-Diff-Manchester-Encoding,Pseudoternary-Bipolar-AMI,B8ZS- HDB3 – Evaluation factors-Digital data, analog signals: Encoding Techniques –ASK-FSK-PSK-QPSK-Performance comparision-Analog data,digital signals:Quantization- Sampling theorm-PCM-Delta modulation-Errors- comparision- Analog Data, analog signals:Need for modulation -0 Modulation methods – Amplitude modulation- Angle modulation- Comparision

Unit-2

Digital data communication techniques:

Asynchronous and synchronous transmission –Error Detection techniques : Parity checks – Cycle redundancy checks-Checksum-Error Correcting codes: Forwards and backward error corrections

DTE & DCE interface:

Characterstics of DTE-DCE interface.Interfaces: Rs-232-C , Rs-449/422,A/423-A.

Unit-3

Data link control

Need for data link control – Line configurations: Topology,duplexity and line discipline – flow control : effect of propagation delay and transmission rate – sliding window protocol-Error Control; Error detection – ARQ – Bit oriented link control- Necessity – Protocols – HDLC,ADCC,LAP-B,SDLC – Character-oriented link control- Binary synchronous communications – Their categories-Limitations,serial Controller 85C30.

Multiplexing

Advantages – Types of Multiplexing – FDM – Synchronous TDM – Stastical TDM or Asynchronous TDM,Study of their characterstics and carrier systems.

Unit-4

Satellite Communication Systems:

Satellite parameters and configurations – Capacity allocation , Frequency Division FDMA ; Time Division TDMA- Fixed assigned multiple access(FAMA), Demand assign multiple access(DAMA) – The concept of spread spectrum : FHSS, DSSS – CDMA – Transmission and reception.

Books Recommended:

1. Proakin, “Digital Communications”,Mc Graw Hill.
2. W.Stalling, “Wireless Communication And Networks” Pearson.
3. Stallings, “Data & computer Communications”,PHI.
4. Forouzen, “Data Communication & Networking”,Tata Mcgraw Hill.
5. Roden, “Digital & Data Communication Systems”,PHI.
6. Miler, “Introduction to Digital & Data Communications”,Jaico Pub.
7. Pratt, “Satellite Communication”, John Wiuley.

IT-351
WEB DESIGN

L 3 **Theory: 100**

T 1 **Sessional:40**

UNIT 1 The World Wide Web As A Communication System
The state of the World Wide Web, An overview of the World Wide Web, The role of the Web within Cyberspace, Information Spaces in the web.
A Developer ‘s tour of the Web
An overview of the web’s Potential, Web functions, Web development Phases, Developer’s Tour Check
Options for Web Connections: Choosing user Connections, Choosing Information Provider Connections, Accessing the Web, Web Connections Check.
UNIT 2 Information Architecture:
Role of information architecture, collaboration and Communication, Organizing information.
Navigation Systems:
Types of navigation systems, integrated navigation elements, Remote navigation elements, Design elements navigation system.
Web Development Principles And Methodology overview
The Web as a medium for expression, Web User Experiences, Web Communication Process, A Web Development Methodology, Web Principles and Methodology check.
UNIT 3 Web planning and analysis
Principles of web planning, web planning techniques, a web plan example, web analysis processes, web analysis principles
Web design & implementation - an overview of web design, principles of web design, web design methodologies, design techniques, design problems, sample web design, web designer’s Check, The State of the art in web implementation, an implementation overview, implementation Principles, implementation Processes, web implementer’s Check
Web promotion & Innovation
Web promotion Principles, Web promotion Techniques, Web Business Models, Web Promoter’s Check, an Innovation Overview, web Innovation Techniques, and web Innovator’s Check.
UNIT 4 HTML
Structure of HTML document, HTML elements, Linking Basics, Linking in HTML, Images and Anchor tag, their attributes, image maps, list, frames, tables, Forms in HTML, Embedding of graphics through HTML.
XML Basic of XML valid documents,
Syntax, elements & attributes of XML, Document Type Definition,
Ways to use XML: using XML as data source, XML in data islands.
Displaying XML with CSS & XSL, rewriting HTML as XML
DHTML – an introduction of DHTML, relationship between HTML, SGML, & XML
CSS – basic style sheet concept, using style sheet in your document.
JAVASCRIPT
Features of JavaScript, Variables, Control Structures, operators, loping, conditional statements & functions in JavaScript.

Core Language Objects – Array, Boolean, date, Math, String, Global, Number
JavaScript with DOM Objects – Event Handling through JavaScript, Window, Document & Forms, Frame Object, Form Validation through JavaScript, JavaScript vs. CGI

Books Specified:

HTML – a beginner's guide by Willard –TMH
JavaScript – Unleased - 3 rd Edition from SAMS – Tech Media.
HTML – Complete Reference By Thomas A Powell – TMH.
http:// www.w3schools.com
Yong ,XML in steps by step – PHI
HTML 3.2 and CGI Professional Reference Edition by John December & Mark Ginsburg – SAMS – Tech Media
Aaron Weiss , Rebecca Taply , Kim Deniels , Stuven Mulder , Jeff Kaneshki : Web Authoring Desk Reference – Tech Media

NOTE : - There will be 8 questions in all; Two will be set from each unit . Students are required to attempt any 5 questions selecting at least 1 from each unit.

IT-357
Operating Systems

L	T	Theory	Sessional
4	**1**	**100**	**40**

UNIT 1:

Introductory Concepts: Operating System functions and characteristics, historical evolution of operating systems, Real time systems, Distributed systems, Methodologies for implementation of O/S service , system calls, system programs , interrupt mechanisms.
Processes: Processes model, process states, process hierarchies, implementation of processes, data structures used such as process table, PCB creation of processes, context switching, exit of processes.
Interprocess communication: Race conditions, critical sections, problems of mutual exclusion, Peterson's solution, producer-consumer problem, semaphores, counters, monitors, message passing.

UNIT 2:
Process scheduling: objective, preemptive vs non- preemptive scheduling, comparative assessment of different algorithms such as round robin, priority bases scheduling, FCFS, SJF, multiple queues with feedback.
Deadlocks: conditions, modeling, detection and recovery, deadlock avoidance, deadlock prevention.
Memory Management: Multiprogramming with fixed partition, variable partitions, virtual partitions, virtual memory, paging, demand paging design and implementation issues in paging such as page tables, inverted page tables, page replacement algorithms, page fault handling, working set model, local vs global allocation, page size, segmentation and paging.

UNIT 3:
File Systems: File type, attributes, access and security, file operations, directory structures, path names, directory operations, implementation of file systems, implementation of file and file operations calls, implementation of directories, sharing of files, disk space management, block allocation, free space management, logical file system, physical file system.
Device Management: Techniques for device management , dedicated devices, shred devices, virtual devices, device characterices-hardware considerations: input and output devices, storage devices, independent device operation, buffering, multiple paths, device allocation considerations.

UNIT 4:
Distributed Systems: Introduction to II/W and S/W concepts in distributed systems, Network operating systems and NFS, NFS architecture and protocol, client- server model, distributed file systems, RPC- Basic operations, parameter passing, RPC semantics in presence of failures threads and thread packages.
Case Studies: Unix/Linux: Implementation of processes, memory model, file system, deadlock handling strategies, scheduling , IPC, system calls.
WINDOWS NT: Layered structure, interpretability.

Books recommended:

1. Peterson J L & Silberschatz , " Operating System concepts" Addison Wesley
2. Brinch, Hansen, "Operating System Principles" PHI
3. Tenanbaum A S " Operating System", PHI.

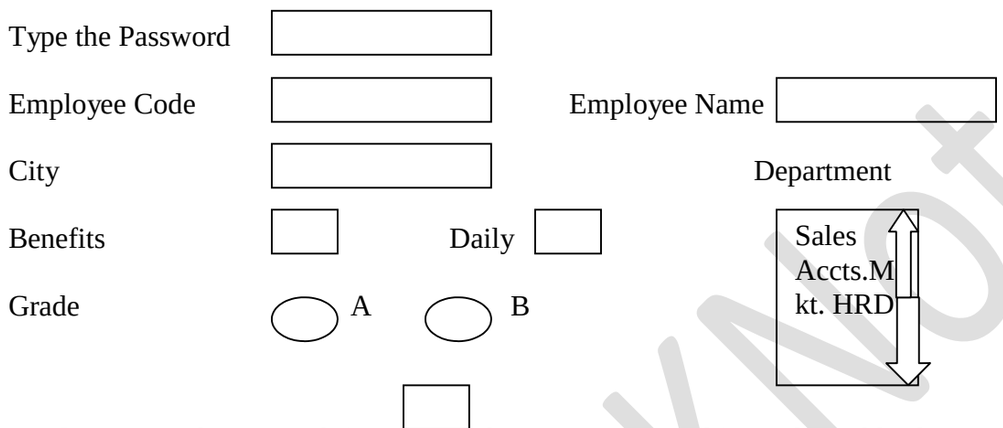
NOTE: There will be 8 questions in all . Two questions will be set from each unit. Students are required to attempt 5 questions selecting at least 1 question from each unit

IT-361
Web Designing Lab

L	T	P
-	-	3

Sessional : 40 Marks
Exam : 25 Marks

1. Design the following Form on WEB Pages:-



2. Create a web page with four frames has picture, second frame has table showing the details of students in your class, third frame has a list of syllabus of your semester and last frame a hyperlink to a different web page.

3. (a) Write a program in JAVASCRIPT to check that the string is palindrome or Not.
   (b) Write a program in JAVASCRIPT to shake the window.
   Write

4. Write a Program in JAVASCRIPT to make a simple calculator.

5. (a) Write a Program in JAVASCRIPT to display all the information about the

browser, you are using in the lab.

(b) 1. Write a program in java Script to display Count Value, which counts the number of times mouse Over event occurred on placing on a link.

2. Write a program in JAVASCRIPT, which will response to the mouse & keyboard events

6. (a) Write a program in JAVASCRIPT to display a digital clock.

(b) 1. Write a program in JAVASCRIPT which will show the current date & time.

2. Convert that date & time into another format.

7. (a) Write a program in JAVASCRIPT to make a personalize welcome page

(b) Redirect the user to the e-mail form page after 20 seconds.

8. (a) Write a Program in JAVA Script to make an email registration form.

(b) Validate all the input fields.

(c) Display all user details on a new page.

9. Create a page (Open.html) with a link " Open new Window". On clicking the link, call a JavaScript funtion to open a page (new.html) in a new window with attributes no toolbar, no resize, no scroll bar, height=200, width=200. Take your name as input in this page & clicks submit. Display the entered in the page "open.html".

10. (a) Design (college_year_branch_Student.xml), which describes data about college students.

(b) Display the above xml page in an html page as data island.

11. (a) Create & use style-sheet (CSS) for login & display detail page.

(b) Create & use Style-sheet (XSL) for xml page used in 10^{th} practical.

12. Create web pages for an organization like your College giving details about various Departments, Faculty Members, Its Foundation, various Achievements etc. using different features of web designing.

IT-363

Digital & Data Communication Lab

L	T	P		
-	-	2	Sessional	: 25 Marks
			Exam	: 25 Marks

1. Perform Amplitude modulation/demodulation and calculate modulation index and percentage (%age) modulation.
2. Perform frequency modulation for calculating frequency deviation (DF) and modulation index.
3. Prove and perform sampling theorem for various bit rates (eg. 8kbps, 16kbps, 32kbps, 64kbps).
4. Convert analog signal into digital using delta modulation/demodulation.
5. Prove and perform "adaptive delta modulation/demodulation" to reduce the quantization voice.
6. Perform and verify the following A/D converting modulation/demodulation Technique using:
   i) PAM
   ii) PPM
   iii) PWM
7. Analyze the pulse code modulation (PCM) system and perform A/D conversion using PCM.
8. Prove and perform multiplexing using time division multiplexing technique.
9. Analyze and establish a PC TO PC Communication using RS-332 DTE-DCE interface.
10. Establish a transmitter and receiver link using optical fiber.

IT-365

Network Programming Lab

L	T	P		
-	-	3	Sessional	: 40 Marks
			Exam	: 25 Marks

1. (a) Write a program for the following:
    - To implement an integer stack, which can hold 10 values**?**
    - To Convert an integer to its binary equivalent**.**
2. (a) Write a program to implement the concept of inheritance having a base class representing a person, derived from this class make two classes, one about the students and other about employees. Input & Output this information about students & employees.
   (b) Implement Function overloading concept.
3. Write a program to copy the contents of source file into destination file, handling the exceptions.
4. Write a program to implement the buffering concept in which producer produces the data and consumer consumes it using the threading concept.
5. Create an applet in which create another thread which will move a string message continuously.
6. Write a program for the following**:**
    - To demonstrate mouse event handlers**.**
    - To demonstrate key event handlers**.**
7. Create a frame window in which there are two text boxes to input integers and another text box for their sum. The sum is displayed on the click of a button.
8. Write a program for Client and Server and establish communication between them**.**
9. Write a program using servlets and a web page using HTML so as to print the dynamic response from the servlets when the web page is submitted**.**
10. Create a database using MS-Access and access this database in your program using JDBC**.**

IT-365

Multimedia & Virtual Reality Lab

L	T	P		
-	-	2	Sessional	: 25 Marks
			Exam	: 25 Marks

1. Perform the following using Movie Star**:**
   - Video Capturing
   - Video Editing and
   - Creating Video CD.
2. Animate a ball by changing it color, size, & position frame to frame and tweened animation in Flash**.**
3. Using Adobe Deluxe Photoshop edit a digital photo by changing the background color, changing the theme, changing the part of the photo, creating the different parts of the photo and edit them**.**
4. Animate the following using GIF animator**:**
   - Image
   - Banner Text
5. Write a program to simulate the game of Pool Table**.**
6. Transform a alphabetical string into circle and then chage it again in to alphabetical string**.**
7. Perform the following using Multimedia Software**:**
   - Clip a portion of an audio wave file
   - Add another audio file to the above clipped file
8. Perform the following using multimedia software**:**
   - Extract audio from video file like .avi/.dat/.mpeg and save it in MP3
   - Change the format of above audio file into midi/ wav/ asf/ wm/ cda
9. Perform the following using Multimedia software**:**
   - Capture video with web camera.
   - Add the required audio.
   - Synchronize the Audio and Video
10. Create a documentary film of your Department which includes audio, Video, graphics, images and animation**.**

IT-367 Multimedia & Virtual Reality Lab

L	T	P		
-	-	2	Sessional	25 marks
			Exam	: 25 Marks

1.Create any two slides using power point

2.Create a website on any of your favorite topic

3.Create a website of your college using HTML tags

4.Perform the following using Movie star:

- Video Capturing
- Video Editing and
- Creating Video CD.

5.Animate a ball using Flash

6.Using Adobe Deluxe Photoshop edit a digital photo by changing the background color,changing the theme, changing the part of the photo and editing the different parts of the photo.

7. Animate the following using GIF animator**:**

- Image
- Banner Text

8. Perform the following using Multimedia Software**:**

- Clip a portion of an audio wave file
- Add another audio file to the above clipped file

9. Perform the following using Multimedia software

- Extract audio from video file like .avi/.dat/.mpeg and save it in MP3

- Change the format of above audio file into midi/wav/asf/wm/cda