BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI – 620 024.

M.Sc. Information Technology - Course Structure under CBCS

(applicable to the candidates admitted from the academic year 2008-2009 onwards)

Semester	Course	Course Title	Ins. Hrs / Week	Credit	Exam Hrs	Marks		Total
						Int.	Extn.	
I	Core Course – I (CC)	System analysis and design	6	5	3	25	75	100
	Core Course – II (CC)	Object Oriented programming with JAVA	6	5	3	25	75	100
	Core Course – III (CC)	Fundamentals of Multimedia Technology	6	4	3	25	75	100
	Core Course – IV (CC)	Applied database systems	6	5	3	25	75	100
	Core Course – V (CC)	Computer programming lab I – JAVA	6	4	3	40	60	100
		Total	**30**	**23**				**500**
II	Core Course – VI (CC)	Web technologies	6	5	3	25	75	100
	Core Course – VII (CC)	Introduction to Unix & Open Systems	6	5	3	25	75	100
	Core Course – VIII (CC)	Computer programming lab II- Unix & Shell programming	6	4	3	40	60	100
	Core Course – IX (CC)	Data mining & warehousing	6	5	3	25	75	100
	Elective – I	Any one from the list	6	4	3	25	75	100
		TOTAL	**30**	**23**				500
III	Core Course – X (CC)	Programming the web	6	5	3	25	75	100
	Core Course – XI (CC)	Enterprise software systems	6	4	3	25	75	100
	Core Course – XII (CC)	Computer programming lab III- web technologies programming	6	5	3	40	60	100
	Elective - II	Any one from the list	6	4	3	25	75	100
	Elective – III	Any one from the list	6	4	3	25	75	100
		TOTAL	**30**	**22**				500
IV	Core Course – XIII (CC)	Object Oriented Systems Technology	6	4	3	25	75	100
	Core Course – XIV	Open source based web-application development.	6	4	3	25	75	100
	Project Work	Dissertation=80 Marks [2 reviews –20+20=40 marks Report Valuation = 40 marks] Viva = 20 Marks	**6**	**6**	**-**	-	-	100

	Elective – IV	Any one from the list offered in Electives I,II & III **OR** Industry Internship-I	6	4	3	25	75	100
	Elective - V	Any one from the list offered in Electives I,II & III **OR** Industry Internship-II	6	4	3	25	75	100
		TOTAL	**30**	**22**				**500**

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Elective – I

1. Introduction to Embedded Systems
2. IBM Personal Computer Architecture & Hardware troubleshooting
3. Micro-processors and Interfacing

Elective – II

1. Wireless communications and networks.
2. Data communications and networks.
3. Computer networks and Internets.

Elective – III ,

(1). Geographical information system Technology. (2). Microsoft Windows Programming technology. (3). Advanced J2EE technology. (4). Tamil Computing Technology. (5). Software engineering. (6). Network security. (7). Computer Graphics. (8). Mobile communication.

NOTE For Industry Internship-I & II

- Internship I & II, PROJECT-WORK should be treated independently.
- The examination for Industry Internship-I & II, PROJECT-WORK should be carried out on different days by different examiners.
- Student can opt for one of the following
  i. Industry Internship - I & II (both from industry)
  ii. One Internship course and other as Elective course.
- Internship I & II can NOT be carried out with in the college. In such cases, student must enroll in Elective course IV & V.
- If the student opt for internship, at the end of the internship, he must make a ***presentation*** about the work carried about by them in Internship I & II along with ***a report*** of work-done in their industry internship. University evaluation marks (60%) shall be based on viva (20 marks)+ report (40 marks).
- PROJECT-WORK can be carried out by the student in-house (i.e. within the department under the guidance of a department faculty).
- While PROJECT-WORK may be carried out in-house in the department, Internship I & II can be carried out in outside organizations such as DTP company, Photoshop or any other organization that utilize Information technology (but student must meet number of hours/week criteria for each course).
- Internship I & II, PROJECT-WORK - all three can be carried out by the student in the same organization/company if he prefer so. ***Alternatively all three can be***

carried out from three different organization as well (but student must meet number of hours/week criteria for each course). For example Internship I can be spent in a local DTP shop, Internship II can be spent in a typesetting office of a local news paper company, PROJECT WORK can be carried out from an EDP organization.

- Internship I & II topic matter MUST cover different subject matter and the student is expected to play different roles in each (so that he acquires different skill). The department course coordinator should ensure the compliance. For example :
    i. If in Internship I if a student is assuming the role of a programmer, in Internship II he may play a different role such as software tester.
    ii. If in Internship I if a student is assuming the role of a JAVA programmer, in Internship II he may play a different role as a .NET programmer.
    iii. If in Internship I if a student is assuming the role of a S/W DESIGNER, in Internship II he may play a different role as a programmer.
- If the student decides to choose industrial internship during their fourth semester (Internship I & II,), for each of Internship I & II, PROJECT-WORK student must make a separate presentation and a separate report (fro each subject) and the evaluation has to be conducted by different examiners and on different days.

Note:

Core Courses include Theory, Practicals & Project

No. of Courses	14 - 17
Credit per Course	4 - 5
Total Credits	70

Elective Courses

(Major based / Non Major / Internship)

No. of Courses	4 – 5
Credit per Course	4 – 6
Total Credits	20

	Internal	External
Theory	25	75
Practicals	40	60

Project

Dissertation	80 Marks	[2 reviews – 20+20	=	40 marks
		Report Valuation	=	40 marks]
Viva	20 Marks			20 marks

Passing Minimum in a Subject

CIA	40%	Aggregate 50%
UE	40%	

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CORE COURSE –I - SYSTEM ANALYSIS AND DESIGN

Objective: *To teach students about complete set of activities performed by a software developer (and the role of various stake holders) in constructing a real world software system*

UNIT I

Context of Systems Analysis and Design methods – Information System building block – Strategies for information Systems development – Activities in Project management.

UNIT II

Detailed study of Phases of Systems analysis – Techniques for requirement discovery – Modeling the system requirements (only outline).

UNIT III

Detailed study of Process modeling – Feasibility analysis and the system proposal – Tasks in System design.

UNIT IV

Application architecture and modeling – Input/output design & Prototyping – User interface design.

UNIT V

System construction/Implementation - Operation and Support.- case study using "Employee monthly salary bill Generation system"

TEXT BOOK:

1. Whitten Jeffrey L. & Bentley Lonnie D., Systems Analysis and design methods, Seventh edition, Tata McGraw-Hill, , 2007

[Unit-1 (Chapters 1,2,3,4) ; **Unit-2 (**Chapters 5,6,7) ; **Unit-3 (**Chapters 9,11,12) ; **Unit-4 (**Chapters 13,15,16,17) ; **Unit-5 (**Chapters 19,20)]

REFERENCE BOOK

1. Kendall. K.E & Kendall. J.E, System analysis and design, Fifth edition, Prentice Hall of India/Pearson education, 2006

CORE COURSE –II - OBJECT ORIENTED PROGRAMMING WITH JAVA

Objective: *To teach students about developing object oriented programs using JAVA language (and side-by-side the JAVA language itself).*

UNIT-I

Problem solving – Simple computations – Primitive types, Expressions, variables- Using Objects – Decisions, Iteration

UNIT-II

Basic JAVA classes, packages - Java class hierarchy – Writing complex programs using Packages, User defined classes and flow control statements.

UNIT-III

GUI based programming – Methods, Classes – Arrays and Collection.

UNIT-IV

Inheritance, Polymorphism, Overloading – Examples – Exception Handling –Threads.

UNIT-V

Files and Streams- Graphics – Applets – JDBC programming.

TEXT BOOK:

1. James P Cohoon & Jack W Davidson, Programming in JAVA 5.0 (JAVA 2.0 SDK 1.5), Tata McGraw Hill, First Indian Edition, 2007 (ISBN 0-07-063440-8)
[Unit-1 :(Chapters 1,2,3,5,6) ;**Unit-2** : (Chapters 4,5,6) **Unit-3 (**Chapters GUI-Interlude-1, 7,8,9) ; **Unit-4 (**Chapters 9,10, GUI-Interlude-2,12) ; **Unit-5 (**Chapters 14,15,16 of TEXTBOOK-2) **]**
2. Balaguruswamy E., Programming with JAVA - A Primer, Tata McGrawHill, Third Edition, 2005

REFERENCE BOOK

1. Krishnamurthy. R, Prabhu , Internet & JAVA programming, New Age publishers, New Delhi, 2004.
2. Deitel.H.M & Deitel.P.J, JAVA- How to program, Sixth edition, Prentice Hall of India/Pearson Education, 2006 (ISBN 81-203-2800-0).

CORE COURSE –III - FUNDAMENTALS OF MULTIMEDIA TECHNOLOGY

Objective: *To teach students about various tools & technologies that provide audio, video data handling capabilities to a computer.*

UNIT-I
Introduction to Multimedia – Multimedia Authoring and Tools – Graphics and Image Data Representations - Color in Image and Video.

UNIT-II
Fundamental Concepts in Video – Basics of Digital Audio - Lossless Compression Algorithms.

UNIT-III
Lossy Compression Algorithms - Image Compression Standards - Basic video compression techniques.

UNIT-IV
MPEG Video Coding (MPEG-1 and 2) - Basic Audio Compression techniques - MPEG Audio Compression.

UNIT-V
Computer and Multimedia Networks- Multimedia network communications and applications – Content based Retrieval in Digital Libraries.

TEXT BOOK:
1.Ze-Nian Li and Mark S. Drew , Fundamentals of Multimedia , Pearson education/Prentice Hall of India, First Edition,2006, (ISBN 81-7758-823-0)
[Unit-1 :(Chapters 1,2,3,4); **Unit-2** : (Chapters 5,6,7); **Unit-3 (**Chapters 8,9,10); **Unit-4 (**Chapters 11, 13);**Unit-5 (**Chapters 15,16,18)**]**

CORE COURSE –IV - APPLIED DATABASE SYSTEMS

Objective: *To teach students about data storage, retrieval, data base design; Introduce modern developments / concepts in data management.*

UNIT I

Introduction to Database systems - Database System Architecture – Physical data organization.

UNIT II

Relational query language SQL.- Entity-Relational model – Enhanced ER model.

UNIT III

Introduction to database design & Normalization - Query processing – Query Optimization.

UNIT IV

Transaction processing – Concurrency control – Database recovery -Database security.

UNIT V

Object oriented databases- Object Relational databases – Parallel & distributed database systems – Decision support systems – Emerging Database technologies –Introduction to MySQL.

TEXT BOOK:

1. S.K.Singh, Database systems – Concepts, design and application, First edition , Pearson education, 2006

[Unit-1 :(Chapters 1,2,3,5); **Unit-2** : (Chapters 5,6,7); **Unit-3 (**Chapters 8,10,11); **Unit-4 (**Chapters 12,13,14); **Unit-5 (**Chapters 15,16,17,18,19,21, 27)]

REFERENCE BOOK:

1.Date.C.J, An Introduction to database systems, Eight edition, Pearson Education, India, 2003

CORE COURSE –V - COMPUTER PROGRAMMING LAB I – JAVA

Objective: *To teach students how to program in JAVA language (from an advanced perspective)and use certain object oriented concepts in programming.*

Suggested exercises:

1.Write a JAVA program to sort the given numbers using arrays.
2. Write a JAVA program to implement the FIND and REPALCE operations in the given multiple text.
3. Write a JAVA program to implement a calculator to perform basic arithmetic operations.
4. Write a JAVA program to handle the division by zero operation.
5. Write a JAVA program to use inheritance.
6. Write a JAVA program to find the area of a rectangle using constructor
7. Develop an applet to get interactive input for adding two numbers and display the sum of the same applet.
8. Write a JAVA program to create buttons in a frame that displays the information on clicking it.
9. Write a JAVA program to display the mouse co-ordinates.
10. Write a JAVA program to display the item selected from a drop-down list.
11. Write a JAVA program to find the student's percentage and grade using command line arguments.
12. Write a JAVA program to create threads and assign priorities to them
13. Write a JAVA program to develop an applet to play multiple audio clips using multithreading.
14. Write a JAVA program to create a window with three check boxes called red, green and blue. The applet should change the colors according to the selection.
15. Write a JAVA program to display the file name chosen from the file dialog box.
16. Write a program to handle File open, read, write operations.
17. Write a program to draw circle or triangle or square using polymorphism and inheritance.
18. Use JDBC to connect to a database and retrieve /insert/update rows of data. Design an applet based GUI to carryout these operations.

CORE COURSE -VI - WEB TECHNOLOGIES

Objective: *To teach students about various software protocols that are necessary to network computers and how they are layered one over the other to provide application level distributed connectivity (popularly known as web technology).*

UNIT-I
OSI Model – Internetworking concepts – IP, ARP, RARP, ICMP, TCP, UDP protocols and their internal details.

UNIT-II
DNS, SMTP/Email, FTP, TFTP, WWW, HTTP, TELNET protocols and their details – Introduction to electronic commerce.

UNIT-III
Introduction to Web technology – Dynamic web pages – Active web pages.

UNIT-IV
User sessions in E-commerce – Electronic commerce Transaction Management – Electronic commerce Security issues – Online payment processing mechanisms.

UNIT-V
Middleware and Component technology for E-commerce – Electronic data interchange – Case study : Online shopping with ASP – Overview of .NET technology.

TEXT BOOK:
1. Godbole Achyut S. , Kahate, Atul, Web technologies, Tata McGrawHill, 2003(ISBN 0-07-047298-x)
[Unit-1 :(Chapters 1,2,3,4); **Unit-2** : (Chapters 5,6,7); **Unit-3 (**Chapters 8,9,10); **Unit-4 (**Chapters 11,12,13,14) ; **Unit-5 (**Chapters 15,16,Appendix-A,B)]

CORE COURSE –VII - INTRODUCTION TO UNIX & OPEN SYSTEM

Objective: *To teach students about the first modern operating system invented by academia namely UNIX and its current popular form namely LINUX; In this course, the student shall be exposed to various software modules of UNIX, programming of UNIX based on scripts and administration of UNIX systems.*

UNIT-I
Basic Concepts of UNIX- Understanding the Unix command - General purpose utilities – the vi/vim editor.

UNIT-II
The GNU emacs Editor - The File System – File attributes – The Shell.

UNIT-III
Simple Filters – The UNIX process - TCP/IP networking tools - The X window system – Electronic mail – The Internet.

UNIT-IV
Filters using grep & sed- Programming with awk – Customizing the environment - Shell programming - Advanced Shell programming including korn and bash – Perl.

UNIT-V
System administration I (File system) - System administration II (General duties) - TCP/IP Network Administration – Building the Internet Server.

TEXT BOOK:
1. DAS SUMITABHA., YOUR UNIX –The ultimate guide, Tata McGrawHill ,2006 (ISBN : 0-07-044687-3)
[Unit-1 :(Chapters 1,2,3,4); **Unit-2** : (Chapters 5,6,7,8); **Unit-3 (**Chapters 9,10,11,12,13,14); **Unit-4 (**Chapters 15,16,17,18,19,20) ; **Unit-5 (**Chapters 21,22,23,24)]

REFERENCE BOOK:
1.Graham Steven, Shah Steve, Linux Administration – A beginner's guide, Third edition, Dreamtech press, 2003.
2. Sobell , Mark G. A practical guide to Linux, Pearson education, 2002 (ISBN 81-7808-690-5).
3. Morris Bach, The Design of UNIX operating system, Pearson education, 2004

C0RE COURSE -VIII
COMPUTER PROGRAMMING LAB II- UNIX & SHELL PROGRAMMING

Objective: *In this course students shall be exposed to using popular version of UNIX (namely LINUX), shall learn programming of it based on scripts and carry out basic UNIX system administration tasks.*

Suggested exercises:

1. Trying out basic UNIX commands – passwd, who, tty, set, mkdir, ls, pwd, echo, wc – Using man, info, whatis and apropos.
2. Using vi editor – Basic operations like opening, inserting/deleting text, navigation, changing/moving text, string search.
3. Using emacs editor – Basic operations like opening, replacing, deleting, moving, copying, undo/redo editing, string search/replace, help facility.
4. File/File system manipulation – Try out basic commands like : pwd, cd, rmdir, cat, file, lp, cancel, df, du, compress, gzip, zip commands – Change file permissions using chmod, umask, chown, chgrp, touch, ln, find.
5. Trying out UNIX commands and writing simple shell scripts – pipes, redirection, special files /dev/null, /dev/tty, cmp, diff, sort, spell, ps, nice, nohup, cron, crontab, at, batch.
6. Using UNIX commands – talk, mesg, finger, rlogin,ftp,rcp,rsh, xhost, xterm,xrdb.
7. Electronic mail system – making use of :- mail,elm,pine, messengers – MIME usage-setting up vacation, .signature, .forward.
8. Internet applications : getting familiarized with Listserv, Newsgroup, tin, irc, web pages.
9. Writing simple shell scripts using awk (such as list the file names in a directory, and filter for a specific file name).
10. Shell configuration – creating/making use of .profile, .cshrc, .login, .logout, .bash_ profile, .bash, .logout, .bashrc.
11. Writing Simple shell programs : use commands like :- if, test, expr, while, for, arrays, strings.
12. Basic system administration: Using commands like - fdisk, mkfs, mount, umount, fsck, passwd, date, wall, groupadd, useradd, usermod, userdel, initdd, tar, lpstat, lpmove, ipconfig, ping, netstat.

Note : Students may use the following books related to LINUX to carryout the above exercises apart from the text book they study in their theory course.

REFERENCE BOOK:

1.Graham Steven, Shah Steve, Linux Administration – A beginner's guide, Third edition, Dreamtech press, 2003. (ISBN 81-7722-309-7)
2. Sobell , Mark G. A practical guide to Linux, Pearson education, 2002 (ISBN 81-7808-690-5).

CORE COURSE -IX - DATA MINING AND WAREHOUSING

Objective: *In this course students shall learn the mathematical & algorithmic details of various data association techniques to discover patterns in underlying data (namely mining data).He also learn how to consolidate huge volume of data in one place efficiently.*

UNIT-I
Introduction to data mining – Association Rule Mining.

UNIT-II
Classification – Cluster analysis.

UNIT-III
Web Data Mining – Search engines.

UNIT-IV
Data warehousing – Algorithms & operations to create data warehouse – Designing data warehouse- Applications of data warehouse.

UNIT-V
Online analytical processing – Information Privacy.

TEXT BOOK:
1. **G.K.Gupta,** Introduction to Data mining with case studies ,Prentice Hall India , 2006 (ISBN 81-203-3053-6) **[Unit-1 :(**Chapters 1,2); **Unit-2** : (Chapters 3,4); **Unit-3 (**Chapters 5,6); **Unit-4 (**Chapters 7), **Unit-5 (**Chapters 8,9)**].**

REFERENCE BOOK:
1.K.P.Soman & Shyam Diwakar and V. Ajay, Insight to Data Mining Theory and Practice, Prentice Hall of India, 2006. (ISBN -81-203- 2897-3)
2. **Jiawei Han and Micheline Kamber** , Data Mining Concepts and Techniques ,Elsevier, Second Edition, 2007 (ISBN: 81-312-0535-5)

ELECTIVE COURSE -I- INTRODUCTION TO EMBEDDED SYSTEMS

Objective: *To teach students about the basics of embedded systems.*

UNIT-I
Basics embedded systems – Hardware fundamentals – Advanced Hardware fundamentals.

UNIT-II
Interrupts - Embedded software and various architectures for it – Basics of RTOS.

UNIT-III
RTOS services - Basic design using RTOS – Micro C/OS-II RTOS API calls and its design

UNIT-IV
Embedded development tools - Debugging techniques – Sample RTOS applications.

UNIT-V
RTOS Program modeling concepts for single and multiprocessor system software development.

TEXT BOOK:
1. David E. Simon, An embedded software primer, Pearson education, 2006 (ISBN 81-7808-045-1)
[Unit-1 :(Chapters 1,2,3); **Unit-2** : (Chapters 4,5,6); **Unit-3 (**Chapters 7,8); **Unit-4 (**Chapters 9,10,11)]

REFERENCE BOOK:
1.Rajkamal, Embedded systems, Tata McGrawHill, 2005 (ISBN 0-07-049470-3) (**Unit-5** Chapter 6)

ELECTIVE COURSE I
IBM PERSONAL COMPUTER ARCHITECTURE & HARDWARE TROUBLESHOOTING

Objective: *To teach students about the internal architecture of IBM Personal Computer and various parts of it and give some knowledge in PC troubleshooting & maintenance.*

UNIT-I
Fundamentals of PC technology – Signaling – CPU family & operation – CPU trouble shooting – details of RAM.

UNIT-II
Motherboards – Power supply, Cooling and Protection.

UNIT-III
Data storage interfaces : Mass storage, Magnetic storage, Optical Storage.

UNIT-IV
I/O ports and Devices – Keyboards and pointing devices- Video sub-system – Audio subsystem.

UNIT-V
Modem and Communication – Networking – Printers – Troubleshooting tools and techniques – Basic data recovery & disaster recovery.

TEXT BOOK:
1. Craig Zacker, John Rourke , PC hardware – The Complete Reference, Tata McGrawHill, 2001 (ISBN 0-07-043606-1)
[Unit-1 :(Chapters 1,2,3); **Unit-2** : (Chapters 4,5); **Unit-3 (**Chapters 6,7,8); **Unit-4 (**Chapters 9,10,11, 12) ; **Unit-5 (**Chapters 13,14,15,17,18)]

REFERENCE BOOK:
1. Govindarajulu. B, IBM PC and clones : Hardware, Trouble shooting and Maintenance. Second edition, Tata-McGraw Hill, (ISBN 0-07-048286-1).
2. Rosch. Winn L., Hardware bible, Sixth edition, Que/Techmedia publishers, 2003 (ISBN 81-7635-696-4).

ELECTIVE COURSE I - MICRO-PROCESSORS AND INTERFACING

Objective: *To teach students about 8085 microprocessor architecture and its interfacing; This shall give them necessary technical basis for understanding modern processors.*

UNIT-I
Basic concepts of microprocessors- 8085 Assembly language – 8085 architecture and memory interfacing.

UNIT-II
Interfacing I/O - 8085 Instruction set.

UNIT-III
Programming techniques - Counters-Time delays – Stack –Subroutines.

UNIT-IV
Software systems & assemblers - Interrupts – Programmable interface devices.

UNIT-V
Serial I/O – Microprocessor applications.

TEXT BOOK:
1. GAONKAR Ramesh, Microprocessor architecture, programming, and applications with 8085., Fifth edition, Penram international publishers, 2000
[Unit-1 :(Chapters 1,2,3,4); **Unit-2** : (Chapters 5,6); **Unit-3 (**Chapters 7,8,9); **Unit-4 (**Chapters 11, 12,14), **Unit-5 (**Chapters 16,17)]

REFERENCE BOOK
1. Mathur Adithya P., Introduction to microprocessors, Tata McGrawHill, 2003(ISBN 0-07-460222-5)

CORE COURSE X - PROGRAMMING THE WEB

Objective: *In this course students shall learn programming tools and technologies with which he can create applications that run in a web browser environment.*

UNIT-I
Fundamentals of web technology - Introduction to HTML and XHTML – Cascading Style Sheets.

UNIT-II
Basics of JAVASCRIPT – JAVASCRIPT and HTML Documents.

UNIT-III
Dynamic Documents with JAVASCRIPT – JAVA APPLETS.

UNIT-IV
Introduction to XML – Basics of PERL – Using PERL for CGI Programming.

UNIT-V
Introduction to Web Server and Servlets – Introduction to PHP – Database Access through the Web.

TEXT BOOK:
1.**Robert W. Sebesta**, Programming the World Wide Web, Pearson education, Second Edition,2005 (ISBN 81-297-0439-0)
[Unit-1 :(Chapters 1,2,3); **Unit-2** : (Chapters 4,5); **Unit-3 (**Chapters 6,7); **Unit-4 (**Chapters 8,9,10);**Unit-5 (**Chapters 11,12,13)**]**

REFERENCE BOOK:
1. H.M. Deitel, P.J. Deitel and A.B. Goldberg, Internet and World Wide Web - How to Programe, Prentice Hall of India , Third Edition, 2006 (ISBN 81-7758-239-9).
2. **BAYROSS IVAN,** Web enabled commercial application development using HTML, DHTML, Java script, Perl CGI, 2nd revised edition, BPB publishing, 2002 (ISBN 81-7656-274-2).

CORE COURSE XI - ENTERPRISE SOFTWARE SYSTEMS

Objective: *In this course students shall learn various components of an application software that help computerize functioning of an enterprise such as sales, materials, production, financial , customer relationship AND supply chain modules.*

UNIT-I

A Foundation for Understanding Enterprise Resource Planning systems – Re-engineering and Enterprise Resource Planning Systems – Planning ,Design ,and Implementation of Enterprise Resource Planning Systems – ERP Systems: Sales and Marketing – ERP Systems: Accounting and finance ERP Systems :Production and Materials Management ERP Systems: Human Resources

UNIT-II

Managing an ERP Project – Supply chain Management and the marketplace – Rules of the game – Winning as a team.

UNIT-III

Solutions - Supply chains as Systems - Modeling the Supply Chain – Supply Chain Software - **Operations** – Meeting Demand – Maintaining Supply – Measuring Performance

UNIT-IV

Planning – Forecasting Demand – Scheduling Supply – Improving performance – Mastering Demand – Designing the Chain – Maximizing Performance

UNIT-V

Essentials of Customer relationship management – Designing CRM application – Various modules of CRM application - Advantages of CRM

TEXT BOOK:

1. **Sumner Mary**, Enterprise Resource Planning , First edition, Pearson education, 2006(ISBN 81-317-0240-5) (**Unit 1**: Chapters 1 to 7; **Unit 2:** Chapters 8,9 (continued on text book number TWO))
2. **Taylor David A**., Supply Chains (A managers guide), Pearson education, 2004 (ISBN 81-297-0334-3) (**Unit 2:** Chapters 1,2,3; **Unit 3:** Chapters 4,5,6,7,8,9; **Unit 4:** Chapters 10,11,12,13)
3. **Tiwana**, Essential guide to knowledge management : The e-business and CRM applications, Pearson education (ISBN 81-780-8326-4) **(Unit 5)**

REFERENCE BOOK:

1. **ALTEKAR Rahul V**., Enterprise wide resource planning (Theory and practice), Prentice Hall of India, 2005 (ISBN 81-203-2633-4)
2. **Garg Vinod K & Venkitakrishnan N.K**, Enterprise resource planning, Second edition, Prentice Hall of India, 2006 (ISBN 81-203-2254-1).
3. **Handfield R. B & Nichols. Ernest L**., Introduction to supply chain management, Prentice Hall of India, 2006 (ISBN 81-203-2753-5)

CORE COURSE XII - COMPUTER PROGRAMMING LAB III- WEB TECHNOLOGIES PROGRAMMING

Objective: *In this course students shall learn to use those modern programming technologies with which he can create applications that run in a web browser environment.*

Suggested exercises:

1. Create a Web Page for ABC INFOTECH LTD., With necessary images and marquee.

2. Create Web Pages which displays the menu card of a hotel. The first page should contain the list of items available. After selection of one item , the corresponding details should be displayed on the next page.

3. Create a Web Page which displays the balance sheets for the given list of companies (same
as above problem).

4. Create a Web Page for XYZ INFOTECH LTD., to display the company profile employee details Balance sheet, receive resume ,Customer service using links.

5. Using frames create web pages for a travel agency.

6. Create a Web Page using forms for our college students admission process. (Use list box,
Push button, Radio button, Command Button, Rich text box, text box, etc where ever applicable).

7. Create a Web Page which receives suggestions from customers for a software development
& consultancy agency using necessary VB Script.

8. Using VB Script language , Write a program to display the multiplication table in web page.

9. Using Java Script, display the product details of a vehicle dealer for a given date and time. Also display the details of the vehicles available. Use necessary controls where ever applicable.

10. Create a Web Page which displays the wage of style attributes and event function with demo.

11. Create a Web Page which displays the mouse co-ordinates and image co-ordinates.

12. Create a Web Page which displays the dynamic changing style. The web page should consist of list of cites organized in an order and the corresponding information using mouse over.

ELECTIVE COURSE II - WIRELESS COMMUNICATIONS AND NETWORK

Objective: *In this course students shall learn the basis & structure of wireless protocols and how they stack up to constitute a network module that can run on a computer to enable it to network.*

UNIT-I

Introduction to Wireless technology – Transmission fundamentals – Communication networks – TCP/IP suite.

UNIT-II

Antennas and propagation – Signal encoding techniques – Basics of spread spectrum coding

UNIT-III

Wireless networking – Satellite networking – Cellular wireless networks –

UNIT-IV

Cordless systems & Wireless local loop - Mobile IP and wireless Access Protocols

UNIT-V

Wireless LAN technology – IEEE 801.11 Wireless LAN technology.

TEXT BOOK:

1. **William Stallings**, Wireless communications and networks, Second edition, Pearson education/ Prentice-Hall of India, 2007.

ELECTIVE COURSE II - DATA COMMUNICATIONS AND NETWORKING

Objective: *In this course students shall learn the basis of data communication, mod/demodulation techniques, protocol layers that enable computers to interlink.*

UNIT-I

Introduction to Data communication – Basic concepts – OSI model – Signals – Encoding and modulation.

UNIT-II

Data transmission interfaces – Transmission media- Multiplexing – Error detection and correction.

UNIT-III

Data link control – Data link protocols – Local area networks.

UNIT-IV

Switching – Point-to-Point protocol – X.25.

UNIT-V

Frame relay – ATM – TCP/IP protocol : Part-1,2.

TEXT BOOK:

1. **FOROUZAN Behrouz A.,** Data communications and networking, Tata McGrawHill, Second edition, 2003
[Unit-1 :(Chapters 1,2,3,4,5); **Unit-2** : (Chapters 6,7,8,9); **Unit-3 (**Chapters 10,11,12); **Unit-4 (**Chapters 14,15,17) **Unit-5** (18,19,24,25)**]**

ELECTIVE COURSE II - COMPUTER NETWORKS AND INTERNETS

Objective: *In this course students shall learn the basis of various protocol layers that stack up to enable computers to interlink and work in the internet environment.*

UNIT-I

Basics of Internet applications – Network programming – Transmission media – RS232 communication – Long distance communication – Packets, Frames and Error detection.

UNIT-II

Lan technology and network topology – Addressing and Framing – LAN wiring – WAN technology – Connection oriented networking.

UNIT-III

Protocols and layering – Internetworking – IP, ARP protocol.

UNIT-IV

ICMP,UDP,TCP protocols –Internet routing

UNIT-V

Client-Server interaction – Socket interface –Example of Client and server – IP telephony (VOIP)

TEXT BOOK:

1. **Douglas E. Comer**, Computer networks and Internets, Pearson education, 2004, ISBN 81-7758-749-8
[Unit-1 :(Chapters 1,2,3,4,5,6,7); **Unit-2** : (Chapters 8,9,10,13, 14); **Unit-3 (**Chapters 16,17,18,19); **Unit-4 (**Chapters 23,24,25, 27); **Unit-5 (**Chapters 28,29,30,33)**]**

ELECTIVE COURSE III - GEOGRAPHICAL INFORMATION SYSTEM TECHNOLOGY

UNIT-I

GIS and the Information Age –Introduction to GIS – Maps and GIS – Digital representation of Geographic data.

UNIT-II

Data quality and Data standards – Raster based GIS data processing – Vector based GIS data processing.

UNIT-III

Visualization of geographic information – Remote sensing and GIS integration – Digital terrain modeling.

UNIT-IV

Spatial analysis and modeling – GIS implementation – GIS Project management – GIS issues and prospects.

UNIT-V

The Future of the GIS and GIS in the Future – Study of GIS authoring tools like ESRI/AutoCAD MAP.

TEXT BOOK:

1. Lo C. P. , Yeung Albert K. W. , Concepts and Techniques of Geographic Information Systems**,** Prentice Hall of India, 2005 (ISBN 81-203-2230-4) **[Unit-1 :(**Chapters 1,2,3); **Unit-2** : (Chapters 4, 5,6); **Unit-3 (**Chapters 7,8,9); **Unit-4 (**Chapters 10,11,12)**]**

2. NIIT course notes, GIS and AutoCAD Map, Prentice-Hall of India, 2004. (**Unit-5)** (ISBN 81-203-2519-2).

REFERENCE BOOK:

1.Bruce E. Davis, GIS: A Visual Approach ,Onward Press,Second Edition,2005, (ISBN 0-7668-2764-X)

2. Longley Paul, Goodchild Michael, Maguire David, and David Rahind, Geographic Information Systems and Science, John Wiley & Sons Ltd, 2005 (ISBN 0-470-87001-x paperback).

3. **Heywood Ian, Cornelius Sarah et aln..,** An introduction to Geographic Information Systems, Pearson education, 2006 (ISBN 81-7758-784-6).

4. Michael Worboys & Matt Duckham, GIS A Computing Perspective , CRC press , Second Edition, 2004 (ISBN 0-415-28375-2)

ELECTIVE COURSE III - MICROSOFT WINDOWS PROGRAMMING TECHNOLOGY

UNIT-I

C# and .NET historical background – C# language fundamentals – Object oriented capabilities of C#.

UNIT-II

Structs – Interfaces – Arrays, indexers – Strings – Exceptions – Events and Delegates.

UNIT-III

Building windows applications in C# - Accessing data with ADO .NET

UNIT-IV

Programming web application with web forms – Sample application creation using WebForms.

UNIT-V

What is web service – Web service standards & their specification - Web services programming.

TEXT BOOK:

1. LIBERTY Jesse, Programming C#, Shroff publishers & distributors/O'Rielly , First edition, Feb 2002 (ISBN 81-7366-431-5)

[Unit-1 :(Chapters 1,2,3,4,5,6); **Unit-2** : (Chapters 7,8,9,10,11,12); **Unit-3 (**Chapters 13,14); **Unit-4 (**Chapters 15), **Unit-5 (**Chapters 16)**]**

REFERENCE BOOK:

1. **Hoffman Kevin et aln**.., Professional .NET framework, Wrox press/Shroff publishers, 2003 (ISBN 81-7366-401-3).

2. **Angshuman Chakraborti, Roopendra Jeet Sandhu et aln…,** .NET framework, Prentice Hall India ltd, 2002, ISBN 81-203-2049-2.

3. Visual Studio.NET IDE for Dummies, IDG book house, 2005.

4. **Jesse Liberty (Author), Donald Xie (Author)**, Programming C# 3.0 (Programming) Publisher: O'Reilly Media, Inc.; 5 edition (January 11, 2008) ISBN-10: 0596527438, ISBN-13: 978-0596527433

ELECTIVE COURSE III - ADVANCED J2EE TECHNOLOGY

UNIT-I

J2EE and distributed computing – Design and development of J2EE application – Task list for building J2EE application.

UNIT-II

Resource access : JNDI & LDAP – Data access: JDBC - Control flow: Servlets.

UNIT-III

Java server pages : Introduction – Development – User interface design for Java applications.

UNIT-IV

Enterprise java beans – Building Session & Entity beans.

UNIT-V

Case studies in implementing Chat server - Case studies in implementing a web enabled online banking application.

TEXT BOOK:

1. Bambara Joseph, Allen Paul R., et aln…, J2EE unleashed, SAMS / Techmedia publishers, 2001 (ISBN 81-7635-616-6)
[Unit-1 :(Chapters 1,2,3,4); **Unit-2** : (Chapters 5,6,7); **Unit-3 (**Chapters 8,9,10); **Unit-4 (**Chapters 11,12,13)**]**
2. Jain Pallavi, Siddiqui, Shadab, J2EE – Professional projects, Prentice Hall of India, 2002 (ISBN 81-203-2051-4). **[Unit-5 :** Part 3 & Part-4 of the book).

ELECTIVE COURSE III - TAMIL COMPUTING TECHNOLOGY

UNIT-I

Linux operating system – Localization – Character sets – MBCS/Unicode – Tamil character sets : TSCII/TAB –TAM Maduram etc… – Creating localized fonts – Installing fonts in the operating system.

UNIT-II

TAMIL key board layout – Interfacing application software for TAMIL keyboard – Open source TAMIL software application for office automation – Issues in Developing TAMIL software applications – Tools and techniques for TAMIL software development

UNIT-III

Porting other language software to TAMIL – Localizing commercial/packaged software to TAMIL – Developing client-server/web-enabled software in TAMIL – Issues in creating/storing/retrieving TAMIL data from data stores like MySQL/Oracle.

UNIT-IV

TAMIL optical character recognition OCR – Text-to-Speech conversion techniques for TAMIL language – Computer based Tamil speech recognition principles - TAMIL language MULTIMEDIA assets.

UNIT-V

Resources for TAMIL software development. – Survey of various tools available to carry out TAMIL computing on Windows /Linux environments.

TEXT BOOK:

1. Handbookss and notes specially prepared by the Lectures**, Department of Infn. tech., Bharathidasan Institute of Technology, Bharathidasan University, 2007.**

ELECTIVE COURSE III - SOFTWARE ENGINEERING

Objective: *To teach students about systematic software development methods with emphasis on people, process and product interrelationship. Here various prescriptions that seems to help produce quality software, is taught to the student.*

UNIT-I

Scope of Software engineering – Life-cycle models – The Software Process – Agile Development.

UNIT-II

Practicing Software engineering – System Engineering – Requirements Engineering – Analysis and Design modeling – Architecture level considerations.

UNIT-III

Project management – People, Product, Process view- Metrics for process & project – Estimation – Project Scheduling, Risk management.

UNIT-IV

Testing strategies - Testing tactics - Product metrics.

UNIT-V

Quality management - Change management – Reengineering.

TEXT BOOK:

1. **Pressman, Roger S.,** Software engineering, A practitioner's approach, Sixth edition, McGrawHill International edition, 2005 (ISBN 007-124083-7)
   [Unit-1 :(Chapters 1,2,3,4); **Unit-2** : (Chapters 5,6,7,8); **Unit-3 (**Chapters 21,22,23,24,25); **Unit-4 (**Chapters 13,14,15); **Unit-5 (**Chapters 26,27,31)]

REFERENCE BOOK:

1. **Schach, Stephen,** Software engineering, Seventh edition, Tata Mc GrawHill edition., 2007.
2. **Pfleeger**, Software Engineering, Prentice Hall, 1999

ELECTIVE COURSE III - NETWORK SECURITY

UNIT I

Introduction – Primer on a Networking – Active and Passive Attacks – Layers and Cryptography – authorization – Viruses, worms. The Multi level Model of Security – Cryptography – Breaking an Encryption Scheme – Types of Cryptographic functions – secret key Cryptography – Public key Cryptography – Hash algorithms. Secret key cryptography – Data encryption standard – International Data Encryption Algorithm (IDEA) Modes 4 Operations – Encrypting a Large message – Electronic code book, cipher block chaining, OFB, CFB, CTR – Generating MACs.

UNIT II

Introduction to public key algorithms – Model of arithmetic – Modular addition, Multiplication, Exponentiation. RSA – RSA Algorithm – RSA Security – Efficiency of RSA – Public Key cryptography Standard (PKCS) - Digital Signature Standard – DSS Algorithm – Working of Verification procedure – Security and DSS – DSS controversy.

UNIT III

Authentication – Overview of authentication systems – password based authentication – Add nets based authentication – cryptographic authentication protocols – who is seeing authenticate – passwords as cryptographic keys – Eaves dropping and server database reading – Trusted intermediaries – Session key establishment. Authentication of people – passwords – online – off line password of using – Eavesdropping – passwords and careless users – Initial Password distribution – Authentication tokens.

UNIT IV

Standards and IP security – Introduction to Kerberos – Tickets and Ticket granting tickets. Configuration - logging into the network – replicated KDCs. Overview of IP security – security associations – security association database - security policy database, AH and ESP – Tunnel Transport mode why protect – IP Header IPV4 and IPV6, NAT, Firewalls, IPV4, IPV6 Authentication Header – ESP.

UNIT V

Network Security Application – Email Security – distribution lists – store and forward – security services for email – establishing keys privacy – authentication of the source – massage Integrity – Non- Repudiation – Proof of submission – Proof of delivery. Message flow confidentially – Anonymity – Names and Addresses. Firewalls – packet filters – application level gateway – encrypted tunnels – comparisons why firewalls don't work – denial of service attacks. Web security – Introduction –URLs/URIs – HTTP – HTTP digest authentication. Cookies – other web security problems.

TEXT BOOK

1. **Charlie Kaufman, Radia Perlman and Mike Speciner,** "Network Security: Private Communication in a Public Work", Second Edition, Pearson Education/Prentice Hall of India, Delhi, 2002.
2. **MAIWALD, Eric**, Network security – A begineer's guide, Second edition, Tata-McGraw Hill, 2003 (ISBN 0-07-058241-6)

REFERENCES

1. **William Stallings**, "Network Security: Essentials Applications and Standards", Pearson Education, Delhi, 2002.
2. **Hans**, "Information and Communication Security", Springer verlag, 1998.
3 **Derek Atkins**, "Internet Security", Tech media, 1998.

ELECTIVE COURSE III - COMPUTER GRAPHICS

UNIT-I

A survey of computer graphics – Overview of Graphic systems

UNIT-II

Output primitives (Mathematical functions for creating graphic outputs) – setting attribute of Output primitives.

UNIT-III

Two dimensional geometric transformations – Two dimensional viewing .

UNIT-IV

Graphic structures – Hierarchical modeling – Graphical user interfaces and interactive input methods - Visible surface detection methods.

UNIT-V

Illumination models – Surface rendering methods – Color models – Computer animation.

TEXT BOOK:

1. Hearn Donald, Baker Paulin M., Computer graphics – C version**,** Second edition, Pearson education, 2006. (ISBN 81-7758-765-X)
[Unit-1 :(Chapters 1,2); **Unit-2** : (Chapters 3,4); **Unit-3 (**Chapters 5,6); **Unit-4 (**Chapters 7,8,13), **Unit-5 (**Chapters 14,15,16)**]**

REFERENCE BOOK:

1. Newman William M., & Sproull Robert F. , Principles of interactive computer graphics, Second edition, Tata –McGraw Hill, 1 (ISBN 0-07-463293-0)

ELECTIVE COURSE III - MOBILE COMPUTING

UNIT-I

Introduction to Mobile computing – Wireless transmission basics.

UNIT-II

Medium access control – Telecommunication systems.

UNIT-III

Satellite systems – Broadcast systems.

UNIT-IV

Wireless LAN.

UNIT-V

Mobile network layer- Mobile transport layer.

TEXT BOOK:

1. **Schiller Jochen H**., Mobile communication, Second edition, Pearson education, 2006 (ISBN 81-7758-263-1). **[Unit-1 :(**Chapters 1,2); **Unit-2** : (Chapters 3,4); **Unit-3 (**Chapters 5,6); **Unit-4 (**Chapters 7), **Unit-5 (**Chapters 8,9)**]**

CORE COURSE XIII - OBJECT ORIENTED SYSTEMS TECHNOLOGY

UNIT-I

Structured approach to system construction : SSADM/SADT - An overview of object oriented systems development & Life cycle

UNIT-II

Various object oriented methodologies – Introduction to UML

UNIT-III

Object oriented analysis – Use cases- Object classification, relationships, attributes, methods

UNIT-IV

Object oriented design – Design axioms – Designing classes – Layering the software design :- data access layer, User interface layer, Control/business logic layer

UNIT-V

UML - Examples on : Behavioral models – Structural models – Architectural models from real world problems.

TEXT BOOK:

1. **Bahrami Ali**, Object oriented systems development, Irwin McGrawHill, 2005 (First 4 units covered here).
2. **Booch Grady, Rumbaugh James, Jacobson Ivar**, The Unified modeling language – User Guide, Pearson education, 2006 (ISBN 81-7758-372-7) (UNIT -5 covered here).

CORE COURSE XIV
OPEN SOURCE BASED WEB-APPLICATION DEVELOPMENT

UNIT-I

Installing LAMP stack (Linux, Apache, MySQL, PHP suite)- Configuring installation – Creating PHP pages – ingenerating MySQL with PHP.

UNIT-II

Web forms and user data manipulation – Basic data manipulation using PHP/MySQL forms

UNIT-III

Validating user inputs – Handling errors in form.

UNIT-IV

Case study: Building content management system using LAMP stack

UNIT-V

Configuring log files to improve LAMP stack based web site – Troubleshooting web site.

TEXT BOOK:

1. **Naramore Elizabeth, Gerner Jason,** et aln.., Beginning PHP5, Apache, MySQL web development, Wrox press/Wiley Dreamtech press, 2005 edition. (ISBN 81-265-0581-8) **[Unit-1 :(**Chapters 1,2); **Unit-2** : (Chapters 3,4,5,6); **Unit-3 (**Chapters 8,9); **Unit-4 (**Chapters 13), **Unit-5 (**Chapters 17,18)**]**

2. **Bayross Ivan,** Web enabled commercial application development using HTML, DHTML, JavaScript, Perl CGI., BPB publications, 2nd revised edition, 2002.

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ELECTIVE IV & V – SELECT ANY ONE FROM THE LIST OFFERED IN ELECTIVE I, II & III