Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya

[University]

Enathur, Kanchipuram - 631 561.

B.Tech(Information Technology) Syllabus

(For Candidate admitted from the year 2009 onwards)

CHOICE BASED CREDIT SYSTEM FOR B.Tech(IT) FULL-TIME PROGRAMME

CREDITS

Each course is normally assigned one credit per lecture per week and one credit for two periods of tutorials or part thereof for laboratory or practical per week.

Each semester curriculum shall normally have a blend of theory and practical courses. In the first year the total number of credits will be 40. For Semester III to VIII the average credits per semester will be 28. For the award of the degree a student has to earn a minimum of 208 credits.

DURATION OF THE PROGRAMME

A student is normally expected to complete B.Tech(IT) programme in four years but in any case not more then seven years from the time of admission.

REGISTRATION FOR COURSES

A newly admitted student will automatically be registered for all the courses prescribed for the first year , without any option.

Every other student shall submit a completed registration form indicating the list of courses intended to be credited during the next semester. This registration will be done a week before the last working day of the current semester. Late registration with the approval of the dean on the recommendation of the head of the department along with a late fee will be done, up to the last working day.

Registration for the project work shall be done only for the final semester.

ASSESSMENT

The break-up of assessment and examination marks for theory subjects is as follows.

Internal Assessment   :   50 Marks

Examination   :   50 Marks

The break-up of the assessment and examination marks for practical is as follows.

Internal Assessment   :   50 Marks

Examination   :   50 Marks

The project work will be assessed for 50 marks by a committee consisting of the guide and a minimum of two members nominated by the head of the department. The head of the department may himself be a member or the chairman. 50 marks are allotted for the project work and viva voce examination at the end of the semester.

WITHDRAWAL FROM A COURSE

A student can withdraw from a course at any time before a date fixed by the head of the department prior to the second assessment, with the approval of the dean of the faculty on the recommendation of the head of the department.

TEMPORARY BREAK OF STUDY

A student can take a one-time temporary break of study covering the current year/semester and/or the next semester with the approval of the dean on the recommendation of the head of the department, not later than seven days after the completion of the mid-semester test. However, the student must complete the entire programme within the maximum period of seven years.

MOVEMENT TO HIGHER SEMESTERS

The following minimum credits must be earned by the student to move to a higher semester

To move to the fifth semester   :   45 credits

SUBSTITUTE ASSESMENT

A student who has missed, for genuine reasons accepted by the head of the department, one or more of the assessments of a course other than the examination, may take a substitute assessment for any one of the missed assessments. The substitute assessment must be completed before the date of the fourth meeting of the respective class committees.

A student who wishes to have a substitute assessment for a missed assessment must apply to the head of the department within a week from the date of the missed assessment.

ATTENDENCE REQUIREMENTS

To be eligible to appear for the examination in a particular course, a student must put in a minimum of 80% of attendance in the course. However, if the attendance is 70% or above but less than 80% in any course, the authorities can permit the student to appear for the examination in the course on payment of the prescribed condonation fee.

A student who withdraws from or does not meet the minimum attendance requirement in course must re-register for and repeat the course.

PASSING AND DECLARATION OF EXAMINATION RESULTS

All assessments of all the courses on the absolute mark basis will be considered and passed by the result passing board in accordance with the rules of the university. Thereafter, the controller of examinations shall convert the marks for each courses to the corresponding letter grade as follows, compute the grade point average and cumulative grade point average , and prepare the grade cards.

90 to 100 marks	-	Grade 'S'
80 to 89 marks	-	Grade 'A'
70 to 79 marks	-	Grade 'B'
60 to 69 marks	-	Grade 'C'
55 to 59 marks	-	Grade 'D'
50 to 54 marks	-	Grade 'E'
less than 50 marks	-	Grade 'F'
Insufficient attendance	-	Grade 'I'
Withdrawn from the course	-	Grade 'W'

A student who obtains less than 50 marks out of 100 in the subject or less than 20 out of 50 in external exam or is absent for the examination will be awarded Grade 'F'.

A student who earns a grade of S,A,B,C,D or E for a course is declared to have successfully completed that course and earned the credits for that course. Such a course cannot be repeated by the student.

A student who obtains letter grade F in a course has to reappear for the examination in that course.

A student who obtains letter grade I or W in a course has to re-register for and repeat the course.

The following grade points are associated with each letter grade for calculating the grade point average.
S – 10;   A-9;   B-8;   C-7;   D-6; E-5; F-0

Course with grades I and W are not considered for calculation of grade point average or cumulative grade point average. F Grade will be considered for computing GPA and CGPA.

A student can apply for retotalling of one or more of his examination answer papers within a week from the date of issue of grade sheet to the student on payment of the prescribed fee per paper. The application must be made to the controller of examinations with the recommendation of the head of the department.

After results are declared, grade cards will be issued to the students. The grade card will contain the list of courses registered during the year/semester , the grades scored and the grade point average(GPA) for the year/semester.

GPA is sum of the products of the number of credits of a course with the grade point scored in that course, taken over all the courses for the Year/Semester , divided by the sum of the number of credits for all courses taken in that year/semester. CGPA is similarly calculated considering all the courses taken from the time of admission.

After successful completion of the programme, the degree will be awarded with the following classification based on CGPA.

For First Class with Distinction the student must earn a minimum of 208 credits within four years from the time of admission, pass all the courses in the first attempt and obtain a CGPA of 8.25 or above.

(Or)

For First Class the student must earn a minimum of 208 credits within five years from the time of admission and obtain a CGPA of 6.5 or above.

(Or)

For Second Class the student must earn a minimum of 208 credits within seven years from the time of admission.

ELECTIVES

Apart from the various elective courses offered in the curriculum of the branch of specialisation, a student can choose a maximum of two electives from any specialisation under the faculty during the entire period of study, with the approval of the head of the department and the head of the department offering the course.

COURSE CONTENT
&
SCHEME
OF
EXAMINATION

SCSVMV (University)

B.Tech., Information Technology and Engg., Credit Based System

Subject Code	Subject (I&II SEMESTER)	Ins./Week in Hours			C (Units)
		L	T	P/D	
EBU12KT041	English	3	-	0	3
EBU12FT092	Mathematics I & II	3	1	0	4
EBU12GT093	Applied Physics	3	1	0	4
EBU12HT094	Applied Chemistry	3	1	0	4
EBU12DT055	Basic Civil & Mechanical Engg	3	-	0	3
EBU12BT056	Basic Electrical and Electronics Engg	3	-	0	3
EBU12AT057	Basic Computer Science and Engg	2	-	0	2
EBU12DT028	Engineering Drawing	2	-	3	3
EBU12HT089	Environmental Science and Engg	3	0	2	3
EBU23JT0210	Sanskrit & Indian Culture I & II	1	0	2	1
EBU12GP041	Physics Lab			2	2
EBU12HP072	Chemistry Lab			2	2
EBU12AP023	Computer Lab			2	2
EBU12DP054	Workshop Practical			2	2
EBU12CP025	Electrical Workshop			2	2
	TOTAL				**40**

L – Lecture **T – Tutorial** **P – Practical** **I - Internal**

E –External **C- Credits** **D-Drawing**

B.Tech., Information Technology , Credit Based System

III Semester

Subject Code	Subject	Ins./Week in Hours			C (Units)
		L	T	P	
EBU3FT101	Engineering Mathematics – III	3	2	0	4
EBI3BT102	Signals & Systems	3	2	0	4
EBI3BT103	Digital Principles & system Design	3	2	0	4
EBI3BT104	Principles of Communication	3	0	0	3
EBI3ET105	Computer System architecture	3	2	0	4
EBI3ET106	Object Oriented Programming	3	2	0	4
EBU3JT057	Sanskrit & Indian Culture	2	0	0	1
EBI3EP101	OOPS Lab Using Linux Plat form	0	0	4	2
EBI3EP102	Digital Lab	0	0	4	2
					28

IV Semester

Subject Code	Subject	Ins. / Week in Hours			C (Units)
		L	T	P	
EBU4FT101	Applied Statistics And Probability	3	2	0	4
EBI4ET102	Computer Graphics and Multimedia	3	2	0	4
EBI4ET103	Data Structures and Algorithms	3	2	0	4
EBI4ET104	Digital Signal Processing	3	0	0	3
EBI4ET105	Microprocessors & Micro controllers	3	2	0	4
EBI4ET106	System Software	3	0	2	4
EBU4JT057	Sanskrit & Indian Culture	2	0	0	1
EBI4EP101	Data Structures Lab	0	0	4	2
EBI4BP102	Microprocessor/ Micro controller & Assembly Language Programming Lab	0	0	4	2
					28

L – Lecture **T – Tutorial** **P – Practical** **I - Internal**
E –External **C- Credits**

B.Tech., Information Technology and Engg., Credit Based System

V Semester

	Subject	Ins./ Week in hours			C (Units)
		L	T	P	
EBU5FT101	Numerical Methods and Statistics	3	2	0	4
EBU5BT102	Information Coding Techniques	3	0	0	3
EBU5ET103	Computer Networks	3	2	0	4
EBU5ET104	Relational Database Management System	3	2	0	4
EBU5ET105	Introduction to Java Programming	4	0	0	4
EBU5ET106	Operating System	3	2	0	4
C059JT027	Sanskrit & Indian Culture	2	0	0	1
EBI5EP101	RDBMS Lab	0	0	4	2
EBI5EP102	Java Programming Lab	0	0	4	2
					28

VI Semester

Subject Code	Subject	Ins./ Week in hours			C (Units)
		L	T	P	
EBI6ET101	Data Warehousing and Data Mining	3	2	0	4
EBI6BT102	Mobile computing	3	0	0	3
EBI6ET103	Distributed Computing	3	2	0	4
EBI6ET104	Object Oriented System Design	3	2	0	4
EBI6ET105	Cryptography and Network Security	3	2	0	4
EBI6BT106	Embedded System	3	0	0	3
EBU6JT057	Sanskrit and Indian Culture	2	0	0	1
EBI6EP101	Network Lab Using Linux Plat Form	0	0	4	2
EBI6EP102	Web Technology Lab	0	0	6	3
					28

L – Lecture   **T – Tutorial**   **P – Practical**   **I - Internal**
E –External   **C- Credits**

B.Tech., Information Technology and Engg., Credit Based System

VII Semester

Subject Code	Subject	Ins./ Week in hours			C (Units)
		L	T	P	
EBJ7ET101	Software Engineering	3	2	0	4
EBI7ET102	Professional Ethics and Human Value	3	2	0	4
EBI7ET103	Component Based Technology	3	2	0	4
EBI7ET104	Dot Net Technologies	3	2	0	4
EBI7EE105(A-L)	Elective- I	3	2	0	4
EBI7EE106(A-L)	Elective- II	3	2	0	4
EBI7EP101	Dot net Lab	0	0	4	2
EBI7EP102	CASE Tools Lab	0	0	4	2
					28

VIII Semester

Subject Code	Subject	Ins./ Weeks in hours			C (Units)
		L	T	P	
EBI8ET101	Engineering Economics and Management (Common with BE CSE)	3	2	0	4
EBI8EE102(M-X)	Elective – III	3	2	0	4
EBI8EE103(M-X)	Elective – IV	3	2	0	4
	Project Work	0	0	32	16
					28

L – Lecture　　　　**T – Tutorial**　　　**P – Practical**　　　**I - Internal**
E –External　　　　**C- Credits**

Total Credit : 208

SYLLABUS FOR SANSKRIT & INDIAN CULTURE

Year	Semester	Sub.code	Paper	Subject	Period	Credits
II	Third		2	Mahabharata Eloquence (45 Slokas)	15	1 P.W
			2	And	15	1 (2P.W)
				Elements of Indian Culture & Science and Technology		
	Fourth		3	Hitopadesha (Selected Stories)	15	1 P.W
			3	And	15	1 (2P.W)
				Elements of Indian Culture & Science and Technology		
III	Fifth		4	Raghuvamsa (II Canto 45 Slokas)	15	1 P.W
			4	And	15	1 (2P.W)
				Elements of Indian Culture & Science and Technology		
	Sixth		5	Introduction in to Sanskrit Literature (Selected topics)	15	1 P.W
			5	And	15	1 (2P.W)
				Elements of Indian Culture & Science and Technology		

Examination Pattern for Sanskrit & Indian Culture paper

(Students who have admitted during academic year 2002 onwards & common for all branches)

There will not be any external examination for Sanskrit and Indian Culture paper to B.E. courses but performance of students will be assessed through tests and assignments conducted by the same department. The internal assessment pattern is follows.

	Indian Culture	Sanskrit
First Test	20 Marks	20 Marks
Second Test	20 Marks	20 Marks
Assignment	10 Marks	10 Marks
Total	50 Marks	50 Marks

Total marks for Sanskrit and Indian Culture   -   100 Marks

Passing Minimum marks   -   Aggregate 50%

A candidate shall be declared to have passed the examination he/she should have secure a minimum marks of 50% in each part (Sanskrit & Indian Culture) with the aggregate of 50%

III SEMESTER

EBU3FT101 - ENGINEERING MATHEMATICS - III

3   2   0   4

UNIT I(ANALYTIC FUNCTIONS)

Introduction - Limit and continuity of - Derivative of   - Cauchy-Riemann equations – Analytic functions – Harmonic functions - Orthogonal system – Applications to flow problems – Conformal transformation – Standard transformations: Translation, Magnification and rotation, Inversion and reflection and

Bilinear transformation - Special conformal transformations : $e^{z}, z^{2}, z+\dfrac{1}{z}, \sin\ z.$

UNIT II(COMPLEX INTEGRATION)

Integration of complex functions – Cauchy's theorem – Cauchy's integral formula –Series of complex terms – Taylor's series – Laurent's series – Zeros and Singularities of an analytic function – Residues – Residue theorem – Calculation of residues – Evaluation of real definite integrals.

UNIT III(LAPLACE TRANSFORMS)

Introduction - Definition - Existence conditions - Transforms of elementary functions - Properties of Laplace transforms - - Transforms of derivatives - Transforms of integrals - Multiplication by t^{n} - Division by t - Evaluation of integrals by Laplace transform - Inverse transforms – Other methods of finding inverse - Convolution theorem (Without proof) - Application to differential equations.

UNIT – IV
(FOURIER TRANSFORMS)
Introduction – definition – Fourier integrals - Fourier Sine and Cosine integral – complex forms of Fourier integral - Fourier transform – Fourier sine and Cosine transforms – properties of Fourier Transforms - Convolution theorem for Fourier Transforms - Parseval's identity for Fourier transforms. (without proof).

UNIT V (Z - TRANSFORM)

Introduction - Definition – standard Z –transforms – Linearity property – Damping rule –standard results – Shifting rules – Initial and final value theorems – inverse Z –transforms – Convolution theorem – Evaluation of inverse transforms – Application to difference equations.

Remark: Each Unit has to be covered in 12 hours (each of 50 minutes duration). Questions may be set to test the problem solving ability of the students in the above topics.

PRESCRIBED TEXT BOOK:

B.S.Grewal, Higher Engineering Mathematics, 40th Edition, Khanna Publishers, New Delhi, 2007.

REFERENCES BOOKS

1. Erwin Kreyszig, Advanced Engineering Mathematics, Eighth Edition, John Wiley & Sons, 1999.

2. Veerarajan, T., Engineering Mathematics, Tata McGraw Hill, New Delhi, 2008.

3. Ronald N. Bracewell, The Fourier transform and its applications, McGraw Hill Company, 1986.

4. John H. Mathews, Russel W. Howell, Complex Analysis for Mathematics and Engineering, Third Edition, Narosa Publishing House, 1998.

5. Murry R. Spiegel, Complex Variables, (Schaum's Outline Series), McGraw Hill 1981.

EBI3BT102 - SIGNALS AND SYSTEMS

3   2   0   4

UNIT I
CLASSIFICATION OF SIGNALS AND SYSTEMS

Continuous time signals (CT signals), discrete time signals (DT signals) - step, Ramp, Pulse, Impulse, Exponential, Classification of CT and DT signals - periodic and aperiodic, Random signals, CT systems and DT systems, Classification of systems – Linear Time Invariant Systems.

UNIT II
ANALYSIS OF CT SIGNALS

Fourier series analysis, Spectrum of CT signals, Fourier Transform and Laplace Transform in Signal Analysis, Hilbert Transform.

UNIT III
LTI-CT SYSTEMS

Differential equation, Block diagram representation, Impulse response, Convolution Integral, Frequency response, Fourier Methods and Laplace transforms in analysis, State equations and Matrix.

UNIT IV
ANALYSIS OF DT SIGNALS

Spectrum of DT Signals, Discrete Time Fourier Transform (DTFT), Discrete Fourier Transform (DFT), Properties of Z-transform in signal analysis.

UNIT V
LTI-DT SYSTEMS

Difference equations, Block diagram representation, Impulse response, Convolution SUM, Frequency response, FFT and Z-transform analysis, State variable equation and Matrix.

TEXT BOOKS:

Alan V. Oppenheim, Alan S. Willsky with S.Hamid Nawab, "Signals & Systems", Pearson / Prentice Hall of India Pvt. Ltd., 2003.

REFERENCES

1. K.Lindner, "Signals and Systems", McGraw-Hill International, 1999.
2. Simon Haykin and Barry Van Veen, "Signals and Systems", John Wiley & Sons, Inc., 1999.
3. Robert A.Gabel and Richard A.Roberts, Signals and Linear Systems John wiley and sons 3ed, 1987.
4. Roger E.Ziemer et al, Signals and systems continuous and Discrete, Mc Millan 2ed, 1990.

EBI3BT103 - DIGITAL PRINCIPLES AND SYSTEM DESIGN

        3   2   0   4

UNIT I
BOOLEAN ALGEBRA AND LOGIC GATES

Review of binary number systems - Binary arithmetic – Binary codes – Boolean algebra and theorems - Boolean functions – Simplifications of Boolean functions using Karnaugh map and tabulation methods – Logic gates

UNIT II
COMBINATIONAL LOGIC

Combinational circuits – Analysis and design procedures - Circuits for arithmetic operations - Code conversion – Introduction to Hardware Description Language (HDL)

UNIT III
DESIGN WITH MSI DEVICES

Decoders and encoders - Multiplexers and demultiplexers - Memory and programmable logic - HDL for combinational circuits

UNIT IV
SYNCHRONOUS SEQUENTIAL LOGIC

Sequential circuits – Flip flops – Analysis and design procedures - State reduction and state assignment - Shift registers – Counters - HDL for sequential logic circuits, Shift registers and counters.

UNIT V
ASYNCHRONOUS SEQUENTIAL LOGIC

Analysis and design of asynchronous sequential circuits - Reduction of state and flow tables – Race-free state assignment – Hazards.

TEXT BOOKS

1.   M.Morris Mano, "Digital Design", 3rd edition, Pearson Education, 2002.

REFERENCES

1.   Charles H.Roth, Jr. "Fundamentals of Logic Design", 4th Edition, Jaico Publishing House, 2000.
2.   Donald D.Givone, "Digital Principles and Design", Tata McGraw-Hill, 2003.

EBI3BT104 - PRINCIPLES OF COMMUNICATION

<div align="right">3   0   0   3</div>

UNIT I
AMPLITUDE MODULATION: TRANSMISSION AND RECEPTION

Principles of amplitude modulation – AM envelope, frequency spectrum and bandwidth, modulation index and percent modulation, AM power distribution, AM modulator circuits – low level AM modulator, medium power AM modulator, AM transmitters – low level transmitters, high level transmitters, Receiver parameters.
AM reception: AM receivers – TRF, Superheterodyne receivers, Double Conversion AM receivers.

UNIT II
ANGLE MODULATION: TRANSMISSION AND RECEPTION

Angle Modulation – FM and PM waveforms, phase deviation and modulation index, frequency deviation, phase and frequency modulators and demodulators, frequency spectrum of a angle modulated waves, Bandwidth requirement, Broadcast band FM, Average power FM and PM modulators – Direct FM and PM, Direct FM transmitters, Indirect transmitters, Angle modulation Vs. amplitude modulation.
FM receivers: FM demodulators, PLL FM demodulators, FM noise suppression, Frequency Vs. phase Modulation.

UNIT III
DIGITAL MODULATION TECHNIQUES

Introduction - ASK, Binary PSK, DPSK, Differentially encoded PSK, QPSK, Binary FSK. Introduction about PCM- Transmitter and Receiver, DM,ADM,DPCM

UNIT IV
BASEBAND DATA TRANSMISSION

Sampling theorem, Quadrature sampling of bandpass signals, reconstruction of message from its samples, Signal distortion in sampling, Discrete PAM signals, power spectra of Discrete PAM signals, ISI Nyquist Criterion for Distortionless baseband binary transmission, eye pattern, baseband M-ary PAM systems, adaptive equalization for data transmission.

UNIT V
SPREAD SPECTRUM AND MULTIPLE ACCESS TECHNIQUES

Introduction, Pseudo-noise sequence, DS spread spectrum with coherent binary PSK, Processing gain, FH spread spectrum, multiple access techniques, wireless communications, TDMA and CDMA, wireless communication systems, source coding of speech for wireless communications.

TEXT BOOKS

1. Wayne Tomasi, "Electronic Communication Systems: Fundamentals Through Advanced", Pearson Education, 2001.
   (UNIT I Chapters- 3,4; UNIT II : Chapters-6,7; UNIT III Chapters-12).

2. Simon Haykin, Digital Communications, John Wiley & Sons, 2003. (UNIT IV Chapters-3,4; UNIT V Chapters-7,8)

REFERENCESS

1   Simon Haykin, Communication Systems, John Wiley & Sons, 4th edn.,2001.
2.   Taub & Schilling, Principles of Communication Systems, TMH, 2nd edn., 2003.
3.   Martin S.Roden, Analog and Digital Communication System, PHI, 3rd edn. 2002.
4.   Blake, Electronic Communication Systems, Thomson Delman, 2nd edn., 2002.

EBI3ET106 - OBJECT ORIENTED PROGRAMMING USING C++

3	2	0	4

UNIT – I

Need for object oriented programming, Characteristics of object oriented language -objects, classes, Inheritance, Reusability, creating new data types, Polymorphism and overloading.C++ programming basics – Data types, Manipulators, Cin, Cout, Type conversion, arithmetic operators, Loops and decisions.

UNIT – II

Class and objects : A simple class, C++ Objects as physical Objects, C++ Objects as Data Types, Constructors, destructors, objects as function arguments,overloaded constructors, member functions defined outside the class, inline functions, Returning objects from Functions.

UNIT – III

Arrays : Defining & accessing Array elements, arrays as class member data, array of Objects. Operator Overloading : Overloading Unary Operators, Operator Arguments, Return Values, nameless Temporary objects, postfix notations. Overloading Binary Operators - Arithmetic operators, Concatenating Strings, Multiple overloading Comparison operators, Arithmetic Assignment Operators.

UNIT – IV

Inheritance-Derived class and base class, derived class constructors, overriding member functions, Class Hierarchies, Abstract base class, Public and private inheritance, Levels of inheritance, Multiple inheritance. Memory management – new and delete operator, a string class using new, Pointers to Objects – Referring to Members, another Approach to new, An array of pointers to Objects.

UNIT –V

Virtual Functions – Pure virtual functions, Late Binding, Abstract Classes, Virtual base classes. Friend Functions – Friend Classes, Friends for functional Notation. Static Functions , investigating destructors. Assignment and copy initialization- overloading the assignment operator, the copy constructor, the this pointer. Templates,function templates, class template.

TEXT BOOKS:

1. Object Oriented Programming in Microsoft C++ - Robert Lafore,Galgotia Publication Pvt Ltd.
2. Let us C++ - Yaswant Kanitkar(used for templates) ,BPB Publication

REFERENCE BOOKS :

1. Object Oriented Programming in C++ - E. Balaguruswamy, Tata Mcgraw Hill.
2. Teach yourself C++ - Herbertsehildt, OSBORNE/MH

EBI3ET105 - COMPUTER SYSTEM ARCHITECTURE

3	2	0	4

UNIT-I

Basic Computer Organisation : Instruction Codes - Computer registers - Computer Instructions-timing and Control-Instruction Cycle-Memory Reference instructions-Input/Output Instructions - Complete computer Description.

UNIT-II

Central Processing Unit : Introduction – General Register Organization-Stack Organization-Instruction formats-Addressing modes-Data Transfer and manipulation - Program Control.

UNIT-III

Computer Arithmetic: Addition and Subtraction – Multiplication Algorithm – Division Algorithm – Floating Point Arithmetic operations – Decimal Arithmetic Unit – Decimal Arithmetic Operations.

UNIT-IV

Input / Output Organization : Peripheral Devices-Input/Output Interface-Asynchronous Data Transfer - Modes of Transfer-Priority Interrupt-Direct Memory Access-Input/Output Processor - Serial Communication.

UNIT-V

Memory Organization : Memory Hierarchy-Main memory-Auxiliary memory-Cache memory-Virtual memory-Memory Protection.

TEXT BOOK

1. Computer System Architecture-M.Morris Mono.Third Edition.
   Prentice Hall of India (Pct) Ltd, New Delhi.1994.

EBU3JT057 - **SANSKRIT & INDIAN CULTURE**

2   0   0   1

Unit I

Mahabharata Eloquence   1 to 9 verses

Unit II

Mahabharata Eloquence   10 to 18 verses

Unit III

Mahabharata Eloquence   19 to 27 verses

Unit IV

Mahabharata Eloquence   28 to 36 verses

Unit V

Mahabharata Eloquence   37 to 45 verses

INDIAN CULTURE - II

PART I

Unit I – importance of smrits & sutras ; significance of Manu's smrits & grihya sutran;
Unit II – Samskaras or Sacraments – defination & significance; Sixteen important Samskaras in due course of human life special reference to the Hindu. Four Ashrama   Dharmas.
Unit III – Worship & Festivals – Worship – Personal and   public   worships;   sixteen   different kinds of *poojas*; *tantra* and *mudras* in *pooja*; significance and different types of Yajnas, utensils and requirements. important sacred places and cultural centres; significance of festivals and impact on culture.

PART II

Unit IV – Importance and significance of Upavedas.
Unit V – Special reference to Ayurveda and Arthasastra.

Reference Books
Acharya, D. 1999. *Dharnuveda* (sub-Veda of Yajurveda). Hindi. Vijaya Kumar Govindram Harsanand. Delhi.
Kangle, R.P. 1992 (rp). *The Kautilya Arthasastra.* Delhi.
Rao, S.K.R. 1994. *Nityarchana*. Agama-kosha (Agam Encyclopaedia). Kalpatharu Research Academy Publications. Vol X. Banglore.
Ray, P. (tr). 1997. *Vasistha's Dhanurveda Samhita*. J.J. Publishing House. Delhi.
Shalini, K. 1997. *Vedic Leguminous Plants* (Medical and Microbiological Study). Classical Publishing Company. New Delhi.
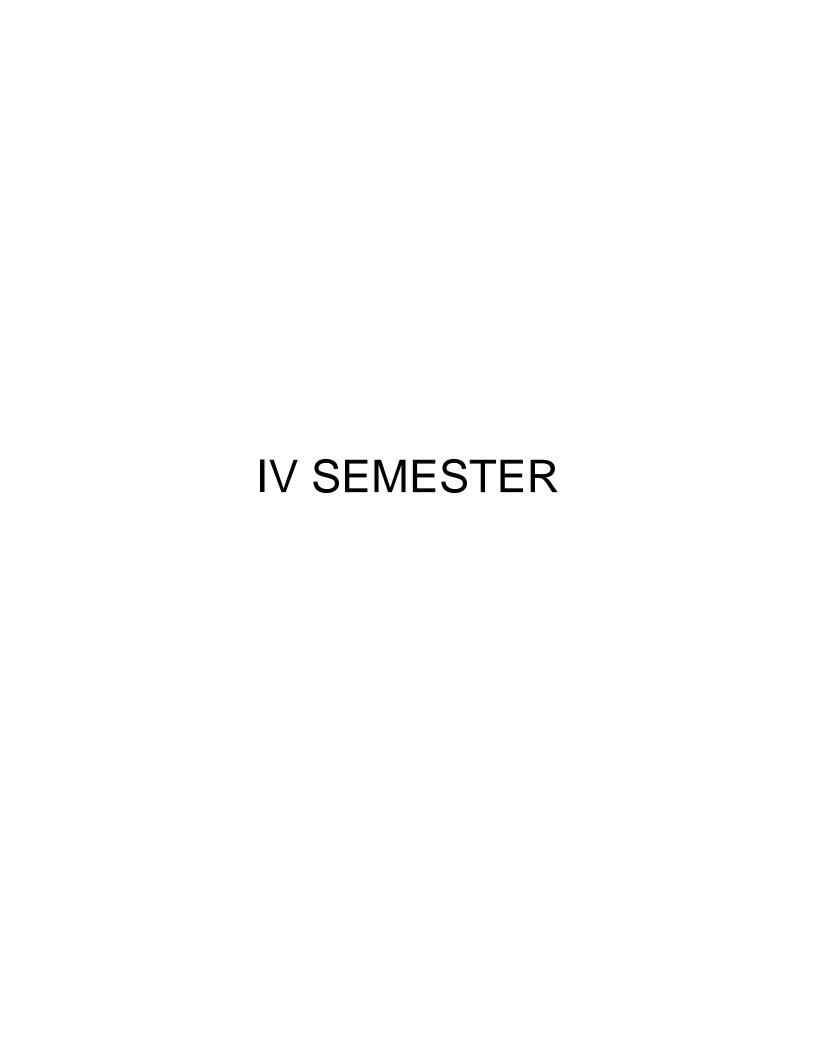
EBI3EP101 - OOPS LAB USING LINUX PLAT FORM

0	**0**	**4**	**2**

1. Illustrate class & objects

2. Illustrate operator overloading

3. To demonstrate the use of constructor and destructor.

4. To demonstrate the use of this pointer

5. To demonstrate the concept of polymorphism applied to the member functions.

6. To enter the records of n number of students and then display them using nested structure.

7. Illustrate the use of friend class

8. To implement the use of class template

9. To implement the use of multiple inheritance

10. To implement the use of multilevel inheritance

11. To implement the use of function template

12. To implement the Pure Virtual Function

13. To implement the use of unary operator

14. To implement the use of Binary operator

EBI3BP102 - DIGITAL LAB

0	0	4	2

1. Adder/Subtractor

2. Multiplexer/Demultiplexer

3. Encoder/Decoder

4. Study of flip flops – RS/JK/T/D

5. Asynchronous Counter

6. Synchronous counter

7. Shift register – Right/ Left/Serial/Parallel

8. Code Converters – Binary to Gray, BCD to Excess 3

9. Seven segment display systems (with Counters & Decoders)

10. Design of combinational and sequential circuits using PLAs and PALs.

IV SEMESTER

EBU4FT101 - APPLIED STATISTICS AND PROBABILITY

<div align="right">3   2   0   4</div>

UNIT – I
(PROBABILITY)

Sample Spaces and Events: Random experiments – samples spaces – events. Interpretation : Introduction – axioms of probability – addition rules – conditional probability – multiplication and total probability rules: Multiplication rule – total probability rule – independence – Baye's theorem – random variables.

UNIT – II
(DISCRETE RANDOM VARIABLES AND PROBABILITY DISTRIBUTIONS)

Discrete random variables – probability mass functions – cumulative distribution functions – mean and variance of discrete random variable – discrete uniform distributions – binomial distribution – geometric and negative binomial distribution: geometric distribution – Hypergeometric Distribution – Poisson distribution.

UNIT – III
(CONTINUOUS RANDOM VARIABLES AND PROBABILITY DISTRIBUTIONS)

Continuous random variables – probability density function – cumulative distribution – mean and variance of a cont random variables – continuous uniform distribution – normal distributions – exponential distribution – Weibull distribution.

UNIT – IV
(JOINT PROBABILITY DISTRIBUTIONS)

Two discrete random variables - Joint probability distribution – marginal probability distribution – conditional probability distribution – independence. Two continuous random variables: Joint probability distribution – marginal probability distribution – conditional probability distribution – independence. Covariance and Correlation.

UNIT – V
(DESIGN AND ANALYSIS OF SINGLE FACTOR EXPERIMENTS)

Introduction : Statistical hypothesis – general procedure for hypothesis test. Designing Engg experiments – The completely randomized single factor experiment – The analysis of variance – multiple comparisons following ANOVA. Randomized block design – design and statistical analysis – multiple comparisons.

Remark: Each Unit has to be covered in 12 hours (each of 50 minutes duration). Questions may be set to test the problem solving ability of the students in the above topics.

TEXT BOOK:
Douglas C. Montgomery and George C. Runger, Applied Statistics and Probability for Engineers, Third Edition, John Wiley & Sons, Inc, 2003, India.

REFERENCES:
1. Kishore S. Trivedi, Probability and Statistics with Reliability, Queueing and Computer Science Applications, Prentice Hall of India, 1996.

2. Richard Isaac, The Pleasures of Probability, Springer Verlag, 1995.

3. Murry R.Spiegel, Larry J. Stephens, Statistics, Third Edition (Schaum's Outline Series), McGraw Hill Company, 1999.

EBI4ET102 - COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

3	2	0	4

UNIT I

Introduction - Line - Circle and Ellipse drawing Algorithms – Attributes of output primitives.

UNIT II

2D Concepts- Two dimensional transformations - Two-Dimensional Viewing-Two dimensional clipping

UNIT III

3D Concepts- Three-dimensional object representation – Polygonal representations, Spline representation, Bezier Curves and surfaces - 3D TRANSFORMATIONS – 3D Projections - Hidden surface and hidden line elimination –

UNIT IV

Visualization and rendering - color models - Texture mapping - animation – morphing.

UNIT V

OVERVIEW OF MULTIMEDIA :Overview of hardware and software components - 2D and 3D graphics in multimedia - audio - video - Standards for multimedia authoring and designing - Multimedia project development.

TEXT BOOK :

DONALD HEARN and PAULINE BAKER, Computer Graphics, C version - Printice Hall New Delhi, 1997.

John Villamil, Casanova and Leony Fernanadez, Eliar, Multimedia Graphics, PHI, 1998.

REFERENCES BOOKS:

1. Foley J.D, Van Dam A, Feiner S.K, Hughes J.F, computer Principles and practice, Addison, Wesley publication company, 1993.
2. Siamon J. Gibbs and Dionysios C. Tsichritzis, Multimedia programming, Addison, Wesley, 1995.
3. Tom Vaughan, Multimedia - making it work, Osborne Mc Graw Hill, 1993

EBI4ET103 - DATA STRUCTURES AND ALGORITHMS

3	**2**	**0**	**4**

UNIT I

Definitions- Data structures and algorithm- analysis of algorithm- asymptotic notation-algorithm techniques-divide and conquer method – binary search-finding the maximum and minimum – merge sort

UNIT II

Linear data structure: Single linked list- Double linked list- Circular linked list- Stack- Queue- Application: infix, postfix and prefix notation- evaluating postfix expression- converting an infix expression to postfix expression – 8 Queens problem

UNIT III

Non linear data structure: Trees-binary trees- representation (node, array)- Traversals- in order, post order and preorder –Application of tree and binary trees- Techniques for graphs: BFS and DFS

UNIT IV

Sorting: Bubble sort, Quick sort, Selection sort, Heap sort, Insertion sort and Shell sort Searching: Definition of searching – searching an order table hashing- resolving hash clashes by open addressing, separate chaining, linear hashing

UNIT V

Greedy method: Minimum cost spanning tree (Prims, kruskal algorithm)-Single source shortest path- Traveling salesperson problem

TEXT BOOKS

1. Seymour Lipschutz – " Theory and Problems of Data Structures" (Unit-II, Unit-III, Unit-IV)

2. Ellis Horowitz & Sartaj Sahani – "Fundamentals of Data Structures in C " – W.H. Freeman and Co. (Unit-1,Unit-II,Unit-V)

REFERENCE BOOKS

1. Jean Paul Tremblay & Paul Sorenson – "An Introduction to Data Structures with Applications" – TMH – 1984.

2. Behrouz A.Forouzan, Richard Gilberg, "Computer Science – Structured Programming Approach Using C ", 2nd Ed, Thomson Asia, 2001.

EBI4BT104 - DIGITAL SIGNAL PROCESSING

3	0	0	3

UNIT-I

SIGNALS AND SYSTEMS: Basic elements of digital signal Processing, Concept of frequency in continuous time and discrete time signals, Sampling theorem. Discrete time signals – Types and classification – Representations – Mathematical operations. Discrete time systems – Methods of analysis – Classification – Block diagram and signal flow graph representations – Structures for realization. Z transform –Convolution and correlation

UNIT-II

DFT AND FFT: Discrete Fourier transform (DFT) and its properties, Relationship between DFT and Z-transform, Discrete convolutions-Linear, Circular and sectional convolutions, Fast Fourier Transform (FFT) - Decimation in -time and Decimation in frequency (radix-2 only), Computation of inverse DFT through FFT.

UNIT-III

FINITE-IMPULSE RESPONSE (FIR) FILTERS: Magnitude response and phase response of digital filters. Frequency response of Linear phase FIR filters, Design techniques for linear phase FIR filters-Fourier series method, Frequency sampling method and Windows-rectangular, Hamming, Hanning and Kaiser. Finite Word Length Effects In Digital Filters

UNIT -IV

INFINITE IMPULSE-RESPONSE (IIR) DIGITAL FILTERS: Review of the properties of Butter worth and chebychev filters of the continuous - time type, IIR digital filter design from continuous-time filters using Impulse-invariance Technique and Bilinear transformation method.

UNIT-V

APPLICATIONS Multi rate signal processing – Speech compression, adaptive filter – sound processing – image enhancement.

TEXT BOOK

1. John G Proakis and Dimtris G Manolakis, "Digital Signal Processing Principles, Algorithms and Application", PHI/Pearson Education, 2000, 3rd Edition.

REFERENCES

1. Alan V Oppenheim, Ronald W Schafer and John R Buck, "Discrete Time Signal Processing", PHI/Pearson Education, 2000, 2nd Edition.

2. Johny R.Johnson, "Introduction to Digital Signal Processing", Prentice Hall of India/Pearson Education, 2002.

3. Sanjit K.Mitra, "Digital Signal Processing: A Computer – Based Approach", Tata McGraw-Hill, 2001, Second Edition.

EBI4BT105 - MICROPROCESSOR AND MICROCONTROLLER

3	2	0	4

UNIT – I

8085 Microprocessor: Introduction, Microprocessor architecture and its operation, memory, I/O devices, 8085 microprocessor – pin diagram, Core architecture. Microprocessor communication and Bus Timings, Multiplexing and Demultiplexing of Address Bus, Decoding and Execution, Instruction set – Classification, Instruction Format, Addressing Modes, Simple Assembly Language Programs, 8085 Interrupt Process, Hardware and Software Interrupts.

UNIT – II

Peripheral Support Chips: PPI (8255), Timer (8253), PIC (8259), PCI (8251), Keyboard Display Interface IC (8279). **Interfacing applications:** ADC / DAC Interface, Stepper Motor Interface, DMA Controller Interface

UNIT – III

8086 Microprocessor: Introduction, 8086 Microprocessor – Pin diagram, and Signal Description, Core Architecture. Memory Segmentation, Minimum mode Operation and Maximum Mode Operation, Interrupt and Interrupt Service Routine. Instruction Set – Classification. Instruction Format Addressing modes, Simple Assembly Language Programs

UNIT – IV

Advanced microprocessors: salient features of 80286 – internal architecture, real addressing mode, PVAM. Features of 80386 internal architecture, real addressing mode, protected mode segmentation and paging. Features of 80486 – internal architecture, features of Pentium – system architecture

UNIT – V

Microcontroller:architechture of 8051-signals-operational features-memory and i/o addressing – interrupt-instruction sets-applications.

TEXT BOOKS:

Unit I & II - Microprocessor Architecture, Programming and applications by R.S.Gaonkar – Penram   international publications Fourth Edition
.
Unit II   - B.Ram, Fundamentals of Microprocessors and Microcomputers, Dhanpat Rai Publications

Unit III, IV – Advanced Microprocessor and Peripherals by A.K RAY & K.M. Bhurchandi – Tata Mc Graw Hill Pub.

Unit IV –   Microprocessor Theory and Application –M.Raffiquzzaman.

UnitV-mohamedali   Mazidi   ,jaince Gillispie mazidi,"the 8051 microcontroller and embedded systems",pearson education 2004.

EBI4ET106 - SYSTEM SOFTWARE

3	2	0	4

UNIT I

INTRODUCTION

Basic concepts-Machine structure-Instruction formats-Addressing modes-Typical Architectures - SIC/XE machine Architecture – IBM 360/370.

UNIT II
ASSEMBLER

Basic Functions – Machine Dependent Assembler features – Machine Independent Assembler features – Assembler Design Options – One pass Assemblers – Multi pass Assemblers – Implementation Examples

UNIT III
LOADERS AND LINKERS

Functions – Features – Relocation - Program Linking - Linking loader implementation- Loader option - Linkage editors – Different schemes - Bootstrap loaders.

UNIT IV
MACROPROCESSORS

Functions - Macro parameters - Using labels - Conditional macro expansion - Recursive macro expansion - General purpose macro processors - Examples.

UNIT V

COMPILERS AND UTILITIES

Introduction to Compilers - Different phases of a compiler - Simple one pass compiler-Code optimization techniques - System Software tools - Implementation of editors -Debuggers.

TEXT BOOKS

1. L.Beck, " System Software, An Introduction to System Programming ", Addison Wesley, 1999.
2. D.M.Dhamdhere, " Systems Programming and Operating Systems ",Second Revised Edition,Tata,McGraw Hill Company, 1999.

REFERENCE BOOK

1.John J. Donavan – "Systems Programming" - McGraw Hill. - 1972.

2.A.V.Aho, Ravi Sethi and J.D.Ullman, " Compilers Principles, Techniques and Tools ", Addison Wesley, 1988.

2   0   0   1

UNIT I

1.Hitopadesha Introduction 2.prologue 3.Important verses

A.**kao|qa-: pu~oNa**   B.**gauiNagaNa**   C.**]Vmaona**

UNIT II

Mitralabha - acquisition of friends

1.Fable I (Old tiger and traveler) 2.Fable II (Cat and Vulture)

3.Important Slokas   A.**maÉsqalyaama**   B.**sa ih gagana**

C.tavad\Bayasya

UNIT III

Suhridbheda - separation of friends

1.Fable 7 (Pair of crows)   2.Fable 9 (pair of Tittibhas)

3.Important Slokas   A.**]payaona**   B.**A=\gaai=\gaBaava**

C.**du:Kmaa%maa**

UNIT IV
Vigraha - War

1.Fable 3 (Rabbits and elephants) 2. Fable 7 (Jackal) 3.Important Slokas

A.**spRSannaip**   B.**Aa%mapxama**   C.**ya: svaBaavaao**

UNIT V
Sandhi -Peace

1.Fable 6 (Crane and crab) 2.Fable 10 (Camel)

3.Important Slokas   A.**]pk~a-irNaa**   B.**%yajao%xauQaata-**   C.**na BaUp`danama**

INDIAN CULTURE - III

Part I

Unit I – Religion and different philosophical Schools - evolution of religious thoughts and ritual practices; astica and nastica sets; Jaina & Buddhist philosophy;

Unit II – Bhakti Movement – evolution of trimurti tradition and Bhakti movement; Shankara, Ramanuja, Madhwa, Vellabha, Bhaskara, etc. personalities and their contribution in Indian philosophy; Alwars, Nayanmars, Kabir, Tulasi, Meera, Goswami, etc. and their role in Bhakti movement;

Unit III – Important personalities and their Contribution – Devarishies, Maharishies, Rishies, Seers and contribution of their institutions to protect the cultural heritage.

Part II
      Unit IV – Significance of Yoga in daily life.
      Unit V – Vedic Mathematics, Astrology & Astronomy, Jyotism, etc. early Indian works and its
      importance in day to day life.

Reference Books

Datta, B. & A.N. Singh. 1962(rp). *History of Hindu Mathematics.* 2 Vols. Asian Publishing House. Bombay.

Jagadguru Swami Sri Bharati Krishna Tirthaji Maharaj. 1994 *Vedic Mathematics*. Motilal Banarasidas. New Delhi.

Kulkarni, R.P. 1983. *Geometry according to Sulba Sutra*. Samsodhana Mandal. Pune.

Radhakrishna, S. 1993(rp). *Indian Philosophy*. Vol I & II. Oxford University Press. Delhi.

Rao, J. 1960. *Principles and Practices of Medical Astrology*. Raman Publications. Banglore.

Swami Satyananda Saraswati. 1997 (rp). *Asanas Pranayama Mudra Bandha*. Bihar Yoga Bharati. Bihar.

EBI4EP101 - DATA STRUCTURES LAB

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1. Implementation of Stack
2. Implementation of Queue.
3. Convert an Infix expression to postfix.
4. Evaluate the given postfix expression.
5. Implementation of Linked List.
6. Implementation of Doubly linked list.
7. Perform Traversals on a Binary Tree.
8. Sort the Given Numbers using.

      i)   Bubble sort
      ii)   Selection Sort.

9. Perform Quick and Merge Sort for the given N numbers.
10. Sort the given Elements using Heap Sort.
11. Perform Binary Search.
12. Perform BFS, DFS.

EBI4BP102 - MICROPROCESSOR/ MICROCONTROLLER & ASSEMBLY LANGUAGE PROGRAMMING LAB

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ASSEMBLY LANGUAGE PROGRAMS USING INTEL 8085 MICROPROCESSOR/8051 MICROCONTROLLER

1) Study of 8085/8086 Microprocessor trainer kits
2) Addition/ Subtraction/Division/Multiplication – 8 Bit Hex/BCD Number
3) Addition/ Subtraction/Division/Multiplication – 16 Bit
4) Search/ Sort an array of data Largest/Smallest , Ascending /Descending order
5) Evaluation of function & series
   (Square/square root of a number & Sum of series / Fibonacci series)
6) Code conversions between Hexa decimal – ASCII Code & Hexadecimal – BCD Number

ASSEMBLY LANGUAGE PROGRAMS USING INTEL 8086 MICROPROCESSOR

7) 16 – Bit Addition/ Subtraction/ Multiplication / Division   &
   Separation of odd/even Numbers
8) Matrix multiplication/Block move of strings

INTERFACING PERIPHERAL WITH 8085 MICROPROCESSOR/8051 MICROCONTROLLER

9) Messaging the display
10) Programming the PPI – 8255 IC in various modes
    – IO Mode (Interfacing Keys, LEDs and 7 segment LED)
    – BSR Mode (Square wave generation)
11) Stepper motor interface
12) Interfacing ADC/DAC (Includes wave form generation)
13) Study of hardware interrupt RST 7.5 (Interrupt driven clock)

V SEMESTER

EBU5FT101 - NUMERICAL METHODS AND STATISTICS

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UNIT I
(SOLUTION OF ALGEBRAIC, TRANSCENDENTAL, AND SIMULTANEOUS EQUATIONS)

Introduction – Bisection method - The method of False position - Newton-Raphson Iterative method . Solution of linear simultaneous equations: Direct methods of solution – Gauss elimination method - Gauss – Jordan method – Iterative methods of solution : Jacobi's method , Gauss – Seidel method.

UNIT II
(INTERPOLATION, NUMERICAL DIFFERENTIATION AND INTEGRATION)

Finite differences – Newton's interpolation formulae – Interpolation with unequal intervals – Lagrange's formula ; Newton's divided difference formula – Inverse interpolation – Numerical differentiation – Maxima and Minima of Tabulated functions - Numerical integration : Trapezoidal rule - Simpson's $1/3^{rd}$ rule - Simpson's $3/8^{th}$ rule.

UNIT III
(NUMERICAL SOLUTION OF ODE AND PDE)

Numerical solution of ODE : Introduction –– Euler's method – Modified Euler's method – Runge's method – Runge-Kutta method – Predictor-corrector method : Milne's method. Numerical solution of PDE: Introduction – Classification of second order equations – Finite difference approximation to derivatives – Elliptic equations – Solution of Laplace's equation – Solution of Poisson's equation – Parabolic equations – Solution of heat equation – Hyperbolic equations – Solution of wave equation.

UNIT IV

(COLLECTION AND ANALYSIS OF DATA)

Classification and tabulation of data - Frequency tables - Graphical representation - Measures of central tendency : Averages, mean, median, mode, Geometric and harmonic means - Measures of dispersion : Range, quartile deviation, Mean deviation, Standard deviation - Relative distribution - Moments - Skewness - Kurtosis - Linear
correlation - Coefficient of correlation - Grouped data : calculation of correlation coefficient - Rank correlation - Linear regression - Regression lines.

UNIT V

(SAMPLING THEORY)

Procedure of testing hypothesis - Standard error - Sampling distribution - Tests of significance for attributes - Tests of significance for large and for small samples - Z-test of significance of coefficient of correlation - Conditions for applying chi square test - Uses of chi square test - Chi-Square test for specified value of population variance - The variance ratio test - Assumptions in F-test - Applications of F-test - Analysis of variance - Analysis of variance in two way classification model.

Remark: Each Unit has to be covered in 12 hours (each of 50 minutes duration). Questions may be set to test the problem solving ability of the students in the above topics.

PRESCRIBED TEXT BOOKS

1. B.S.Grewal, Higher Engineering Mathematics, 40th Edition, Khanna Publishers, New Delhi, 2007.

2. S.P. Gupta, Statistical Methods, 28th Edition, Sultan Chand and Sons., New Delhi, 1997.

REFERENCES BOOKS

1. Ward Chenny, David Kincaid, Numerical Mathematics and Computing, Fourth Edition, Brookes and Cole Publishing Company, 1999.

2. George W. Snedecor, William G. Cocharan, Statistical Methods, Eighth Edition, Affiliated East West Press, 1994.

EBI5BT102 - INFORMATION CODING TECHNIQUES

$$3 \quad 0 \quad 0 \quad 3$$

UNIT I
INFORMATION ENTROPY FUNDAMENTALS

Uncertainty, Information and Entropy – Source coding Theorem – Huffman coding –Shannon Fano coding – Discrete Memory less channels – channel capacity – channel coding Theorem – Channel capacity Theorem.

UNIT II
ERROR CONTROL CODING – BLOCK CODES

Linear Block codes – Syndrome Decoding – Minimum distance consideration – cyclic codes – Generator Polynomial – Parity check polynomial – Encoder for cyclic codes – calculation of syndrome

UNIT III
ERROR CONTROL CODING – CONVOLUTIONAL CODES

Convolutional codes – code tree, trellis, state diagram - Encoding – Decoding:
Sequential search and Viterbi algorithm – Principle of Turbo coding

UNIT IV
COMPRESSION TECHNIQUES

Principles – Text compression – Static Huffman Coding – Dynamic Huffman coding – Arithmetic coding – Image Compression – Graphics Interchange format – Tagged Image File Format – Digitized documents – Introduction to JPEG standards.

UNIT V
AUDIO AND VIDEO CODING

Linear Predictive coding – code excited LPC – Perceptual coding, MPEG audio coders – Dolby audio coders – Video compression – Principles – Introduction to H.261 & MPEG Video standards.

TEXTBOOKS

1. Simon Haykin, "Communication Systems", John Wiley and Sons, 4th Edition, 2001.
2. Fred Halsall, "Multimedia Communications, Applications Networks Protocols and Standards", Pearson Education, Asia 2002; Chapters: 3,4,5.

REFERENCES

1. Mark Nelson, "Data Compression Book", BPB Publication 1992.
2. Watkinson J, "Compression in Video and Audio", Focal Press, London, 1995.

EBI5ET103 - COMPUTER NETWORKS

3   2   0   4

UNIT – I

Introduction to computer Networks: Network topology Network models, Networks components – Type of Networks OSI reference model.

Theoretical basis for data communication.
Transmission Media - Twisted pair cable, coaxial cable fiber optic cable, wireless. – Analog transmission – Digital transmission and switching.

UNIT – II

Error correction and Detections : Types of Errors, Error detection & Corrections.   Interfaces RS232C & RS422
Data Link control & protocols: Flow and Error Control – Stop & wait ARQ, Go back N-ARQ , Selective Repeat ARQ. HDLC.

UNIT III

The Network Layer : Network Layer Design Issues, Routing algorithms Congestion control algorithms-Internetworking devices.

UNIT IV

The Transport layer : Transport layer design issues –Connection management UDP / TCP / IP Protocol.The Session Layer : Session layer design issues, Remote procedure calls.

UNIT V

The Presentation Layer : Presentation layer design issues – Data compressions techniques-Cryptography.The Application layer:- Design issues – File transfer, access and management – Electronic mail-Virtual terminals – Other applications.

TEXT BOOK

1.Computer Networks by Andrew Tanneenbaum
2.Data Communication and Networking by Behrouz fourzen
3.William Stallings , Data and Computer Communications, MacMillan Publishing Co, second edition
     1989.

REFERENCE BOOK

1. Couch Digital and Analog communication systems, MacMillan publishing Co, 1990.
2. Gibson J.D principles of digital and Analog Communications , MacMillan Publishing Co, 1990.
3. Prokis, J.Q, Digital Communications, Mcgraw Hill , 1983.
4. Schweber, Data communications , Mcgraw Hill.

EBI5ET104 - RELATIONAL DATABASE MANAGEMENT SYSTEM

<center>3   2   0   4</center>

UNIT I
INTRODUCTION

Introduction to database management system -Data Abstraction - Data Models – Data Dictionary – Architecture - Entity relationship model - Entities and relations -E-R diagram. Design of E-R and database schema.

UNIT II
FILES AND STORAGE

Primary file organizations and storage structures - indexing and hashing - Indexes for files - Single level ordered indexes - Multilevel indexes - Dynamic multilevel indexes using B- trees and B+ trees.

UNIT III
RELATIONAL MODEL AND DESIGN

Relational model - Key and Referential integrity constraints - Relational algebra - Selection Projection - Join and other operators - Query expression in relational algebra - Mapping ER-model description to relational-model description. SQL language - Data definition - Query formulation - Update operations - View specification in SQL - Embedded SQL. Relational Database Design- Normal forms- Normalisation using functional dependencies - multivalued dependencies and Join dependencies - Domain Key Normal Form

UNIT IV
IMPLEMENTATION TECHNIQUES

Query processing-Transaction Processing-Concurrency control-Recovery.

UNIT V
CURRENT TRENDS

Introduction to Distributed Databases-Object Oriented Databases-Object Relational Databases-Data mining and Data Warehousing.

TEXT BOOK:

1.Silberschatz, H. Korth and S. Sudarshan, "Database System Concepts", 4rth Edition, McGraw-Hill International, 2002.

2.R. Elmasri and Shamakant B. Navathe, "Fundamentals of Database Systems", 3rd Edition, Addision Wesley , 2000

*Unit I - Chapter1,2,3 Refer R. Elmasri and Shamakant B. Navathe
  Unit II-Chapter 4,5   Refer R. Elmasri and Shamakant B. Navathe
  Unit III-Chapter 6,7,8,12&13   Refer R. Elmasri and Shamakant B. Navathe
  Unit IV-Chapter 16,17,18,19 Refer R. Elmasri and Shamakant B. Navathe
  Unit V-Chapter22,23 Refer R. Elmasri and Shamakant B. Navathe
  Unit V-Chapter 9,22 Refer Silberschatz, H. Korth and S. Sudarshan

REFERENCE BOOKS:

1. Raghu Ramakrishnan, " Database Management Systems ", WCB, McGraw Hill, 2000
2. C.J. Date, "An introduction to Database Systems", Seventh Edition, Pearson Eduction,2002.
3. Thomas Connolly , Carolyn Begg ,"Database Systems, A Practical Approach to Design, Implementation and Management", 3rd Edition, Pearson Education , 2003.
   Rob Coronel ,"Database Systems , Design , Implementation & Management :, Thomson Asia, 2001

EBI5ET105 - INTRODUCTION TO JAVA PROGRAMMING

3	2	0	4

UNIT I

Introduction to Java: Comparing C++ and Java - Features of Java, Data Types, operators, control statements, Arrays, Classes, Objects, Interfaces, Abstract Classes, Final, static and Packages, Exception handling

UNIT II

Exploring java.lang: String, StringBuffer and Wrapper Classes Exploring java.io: BufferedInputStream & BufferedOutputStream, File I/O, Object I/O, Piped I/O, Sequence I/P, Buffered I/O, Checked I/O, Inflator/Deflator and LineNumber I/P Streams – File and StreamTokenizer – Reader/Writer Classes

UNIT III

Multithreading: Runnable, Thread and ThreadGroup Exploring java.util: Interfaces: Collection, Enumeration, Iteration, List and Set – Classes: BitSet, Date,GregorianCalender, HashTable, LinkedList, Stack and Vector

UNIT IV

Introduction to MVC Architecture – Introduction to java.awt – Exploring javax.swing: JComponent,Containers, Panes, LayoutManagers, Basic components, Advanced components – Handling events:Listener interfaces and Adapter classes for various components
Theoretical introduction to Java Network Programming in java.

UNIT V

Introduction to n-tier architecture - JDBC principles – Exploring java.sql: Connection, DriverManager,Statement, ResultSet, CallableStatement, PreparedStatement, ResultSetMetaData &DatabaseMetaData

TEXT BOOKS:

1. Units I to IV
Patrick Naughton and Herbert schildt , " The Complete Reference JAVA", Tata McGraw Hill Publishing Limited , New Delhi , 1997.
2. Unit -V
Java Database Programming Bible by John O'Donahue John Wiley & Sons , 2002

REFERENCE BOOKS:

1. Campione, Walrath and Huml, "The Java Tutorial", Addison Wesley, 1999.
2. Eric Armstrong, Jennifer Ball, Stephanie Bodoff, Debbie Bode Carson, Ian Evans, Dale Green, Kim Haase and Eric Jendrock, "J2EE 1.4 Tutorial", Addison-Wesley, 2004
3.Jame Jaworski, "Java Unleashed", SAMS Techmedia Publications, 1999.

EBI5ET106 - OPERATING SYSTEM

3	2	0	4

UNIT I

Introduction - Mainframe systems – Desktop Systems – Multiprocessor Systems – Distributed Systems – Clustered Systems – Real Time Systems – Handheld Systems - Hardware Protection - System Components – Operating System Services – System Calls – System Programs - Process Concept – Process Scheduling – Operations on Processes – Cooperating Processes – Inter-process Communication.

UNIT II

Threads – Overview – Threading issues - CPU Scheduling – Basic Concepts – Scheduling Criteria – Scheduling Algorithms – Multiple-Processor Scheduling – Real Time Scheduling - The Critical-Section Problem – Synchronization Hardware – Semaphores – Classic problems of Synchronization – Critical regions – Monitors.

UNIT III

System Model – Deadlock Characterization – Methods for handling Deadlocks -Deadlock Prevention – Deadlock avoidance – Deadlock detection – Recovery from Deadlocks - Storage Management – Swapping – Contiguous Memory allocation – Paging – Segmentation – Segmentation with Paging.

UNIT IV

Virtual Memory – Demand Paging – Process creation – Page Replacement – Allocation of frames – Thrashing - File Concept – Access Methods – Directory Structure – File System Mounting – File Sharing – Protection

UNIT V

File System Structure – File System Implementation – Directory Implementation – Allocation Methods – Free-space Management. Kernel I/O Subsystems - Disk Structure – Disk Scheduling – Disk Management – Swap-Space Management. Case Study: The Linux System, Windows

TEXT BOOK

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, "Operating System Concepts", Sixth Edition, John Wiley & Sons (ASIA) Pvt. Ltd, 2003.

REFERENCES

1. Harvey M. Deitel, "Operating Systems", Second Edition, Pearson Education Pvt. Ltd, 2002.
2. Andrew S. Tanenbaum, "Modern Operating Systems", Prentice Hall of India Pvt. Ltd, 2003.
3. William Stallings, "Operating System", Prentice Hall of India, 4th Edition, 2003.
4. Pramod Chandra P. Bhatt – "An Introduction to Operating Systems, Concepts and Practice", PHI, 2003

EBU5JT057 - SANSKRIT & INDIAN CULTURE

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UNIT I

I.rGauvaMSapircaya: II.p`QaanaSlaaoka: -
1.AnyaoVura%maanaucarsya Baavama\ 2.saa duYp`QaYaa-
3.tdIyamaaËindtma\ 4.ttao maRgaond`sya 5.vaamaotrstsya
6.tmaaya-gaR(ma\ 7.AlaM mauhIpala 8.kOlaasagaaOrma\
9.AmauM pur: pSyaisa

UNIT II

I.p`QaanaSlaaoka: -
1.kNDUyamaanaona 2.tda p`BaR%yaova 3.tsyaalamaoYaa
4.sa%vaMinavat-sva 5.[it p`galBama\ 6.p`%yaba`vaIccaOnama\
7.maanya: sa mao 8.sa %vaM madIyaona 9.AqaanQakarma\

UNIT III

I.p`QaanaSlaaoka: -
1.ekatp~ma\ 2.BaUtanaukmpa 3.AqaOkQaonaao: 4.td\ rxa
5.etavadu@%vaa 6.inaSamya dovaanaucarsya 7.xatai%kla
8.kqaM nau Sa@ya: 9.saoyaM svadohap-Na

UNIT IV

I.p`QaanaSlaaoka: -
1.BavaanapIdma\   2.ikmaPyaihMsya:
3.sambanQamaaBaaYaNapUva-ma\ 4.tqaoit gaamau>vato
5.tismana\ xaNao 6.]i<aYz va%saoit 7.tM ivaismatM
QaonauÉvaaca 8.Ba@%yaa gauraO 9.tt: samaanaIya

UNIT V

I.p`QaanaSlaaoka: -
1.santanakamaaya 2.va%sasya 3.[%qaM ixatISaona
4.sanaindnaIstnyama\   5.p`atya-qaao>va`tparNaanto
6.p`dixaNaIkR%ya 7.tmaaihtaO%sau@ya 8.purndrEaI: 9.Aqa
nayanasamau%qama\
II.kailadasasya pircaya:

INDIAN CULTURE - IV
(Syllabus for Fifth Semester B.E.)

Part I

Unit I – Temple worship – Evolution of religious establishments; worship in temples; ritual requirements; daily rituals; symbolism of rituals.

Unit II – Temple Festivals – Daily, monthly, yearly, occasionally, etc.; different *vahanas;mudras* in worship; *yajna* and *yajna vedicas* for different sacrifices; other worships and programs related to religious and human welfare.

Part II

Unit III – Significance of Gandharva veda; Evolution & development of music; Karnataka & Hindustani music; main styles; different famous personalities & their contribution. different early musical instruments.

Unit IV – Evolution & development of dance; different schools; important famous personalities.

Unit V – Different schools and contribution of music, dance and dramas to preserve cultural heritage.

Reference Books

1. Rao, S.R.K. 1992. *Alaya and Aradhana*. Agama-Kosha (Agama Encyclopaedia). Kalpatharu Research Academy Publications. Vol VI. Banglore.

2. Sharma, S. 1997. *Comparative study of Evolution of Music in India and the West*. Pratibha Prakashan. Delhi.

3. Sanyal, R. 1987. *Philosophy of Music*. Somaya Publications Pvt. Ltd. Bombay.
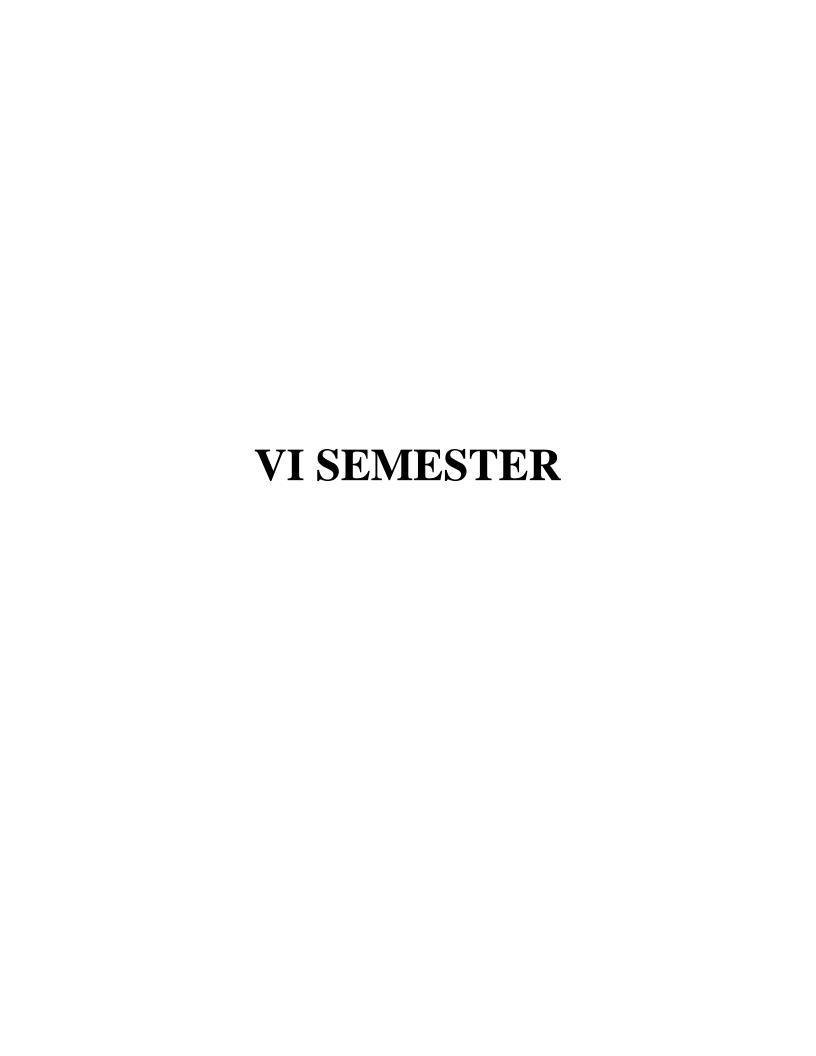
EBI5EP101 - RDBMS LAB

0	0	4	2

1. Data Definition Language (DDL)

2. Create Table, Alter and Drop Table

3. Date, Aggregate Function, Math and Set Operators

4. Joins, Views and Sequence

5. Write a PL/Sql program for inserting record into Table.

6. Write a PLSql program for retrieve the row from table.

7. Write a PL/Sql block to generate Even numbers

8. Write a PL/Sql program to raise a Application Error

9. Write a PL/Sql program to display all the records in Employee table using Cursor.

10. Write a PL/Sql program to copy the content of one table to another table using Cursor.

11. Write a PL/Sql program not Updating Saturday and Sunday in a Table using Trigger.

12. Write a PL/Sql program not Inserting more than twenty Rows in a Table using Trigger.

13. Write a PL/Sql program to find the factorial of No using Function.

14. Write a PL/Sql program to return a value using Procedure.

15. Design an application using Database

EBI5EP102 - JAVA PROGRAMMING LAB

0	0	4	2

1. Write simple structured programs in java to practice the following
   a) conditional statements
   b) iterative statements

2. Write programs in java to practice the following concepts
   a) Class and objects
   b) Consturctors
   c) inheritance
   d) polymorpsm
   e) interface

3. Write program in java to demonstrate the package concepts.

4. Write program in java to demonstrate the Multithreading and it related concepts.

5. Write program in java to illustrate Exception handling.

6. Write a file copy utility using command line arguments and File I/O Streams.

7. Write an utility program to compress and decompress a file

8. Write a program to illustrate the HashTables and Vectors

9. Write a java program to demonstrate the use of following Layouts
   a) Flow Layout b) Border Layout c) Grid Layout
   d) Grid Bag Layout e) Card Layout

10. Write a program in java to create a simple paintbrush applet.

11. Write a program in java to demonstrate the following swing controls
   1. JScrollBar 2. JOptionButton 3. JList 4. JCheckBox

12. Write a program to create a simple calculator interface with basic arithmetic operations.

13. Write program in java to store and retrieve data from databases.
   [use Swing concept to demonstrate]

14. Design an interface to list the various functions available in the connected database using
   DatabaseMetaData

VI SEMESTER

EBIT6ET101 - DATA WAREHOUSING AND DATA MINING

3   2   0   4

UNIT I
BASICS OF DATA WAREHOUSING

Introduction – Data warehouse – Multidimensional data model – Data warehouse architecture –
Implementation – Further development – Data warehousing to data mining.

UNIT II
DATA PREPROCESSING, LANGUAGE, ARCHITECTURES,
CONCEPT DESCRIPTION

Why preprocessing – Cleaning – Integration – Transformation – Reduction – Discretization – Concept
hierarchy generation – Data mining primitives – Query language – Graphical user interfaces –
Architectures – Concept description – Data generalization – Characterizations – Class comparisons –
Descriptive statistical measures.

UNIT III
ASSOCIATION RULES

Association rule mining – Single-dimensional boolean association rules from transactional databases
–Multi level association rules from transaction databases

UNIT IV
CLASSIFICATION AND CLUSTERING

Classification and prediction – Issues – Decision tree induction – Bayesian classification – Association
rule based – Other classification methods – Prediction – Classifier accuracy – Cluster analysis –
Types of data – Categorization of methods – Partitioning methods – Outlier analysis.

UNIT V
RECENT TRENDS

Multidimensional analysis and descriptive mining of complex data objects – Spatial databases –
Multimedia databases – Time series and sequence data – Text databases – World Wide Web –
Applications and trends in data mining.

TEXT BOOKS

1. Han, J. and Kamber, M., "Data Mining: Concepts and Techniques", Harcourt India / Morgan
   Kauffman, 2001.
2. Margaret H. Dunham, "Data Mining: Introductory and Advanced Topics", Pearson Education
   2004.

REFERENCES BOOKS

1. Sam Anahory and Dennis Murry, "Data Warehousing in the real world", Pearson Education,
   2003.
2. David Hand, Heikki Manila and Padhraic Symth, "Principles of Data Mining", PHI 2004.
3. W.H.Inmon, "Building the Data Warehouse", 3rd Edition, Wiley, 2003.
4. Alex Bezon and Stephen J.Smith, "Data Warehousing, Data Mining and OLAP", McGraw-Hill
   Edition, 2001.
5. Paulraj Ponniah, "Data Warehousing Fundamentals", Wiley-Interscience Publication, 2003.

EBI6BT102- MOBILE COMPUTING

3   2   0   4

UNIT I
WIRELESS COMMUNICATION FUNDAMENTALS

Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulations – Spread spectrum – MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks.

UNIT II
TELECOMMUNICATION NETWORKS

Telecommunication systems – GSM – GPRS – DECT – UMTS – IMT-2000 – Satellite Networks **-** Basics – Parameters and Configurations – Capacity Allocation – FAMA and DAMA – Broadcast Systems – DAB - DVB.

UNIT III
WIRLESS LAN

Wireless LAN – IEEE 802.11 - Architecture – services – MAC – Physical layer – IEEE 802.11a - 802.11b standards – HIPERLAN – Blue Tooth.

UNIT IV
MOBILE NETWORK LAYER

Mobile IP – Dynamic Host Configuration Protocol - Routing – DSDV – DSR – Alternative Metrics.

UNIT V
TRANSPORT AND APPLICATION LAYERS

Traditional TCP – Classical TCP improvements – WAP, WAP 2.0.

TEXT BOOKS
1. Jochen Schiller, "Mobile Communications", PHI/Pearson Education, Second Edition, 2003. (Unit I Chap 1,2 &3- Unit II chap 4,5 &6-Unit III Chap 7.Unit IV Chap 8- Unit V Chap 9&10.)
2. William Stallings, "Wireless Communications and Networks", PHI/Pearson Education, 2002. (Unit I Chapter – 7&10-Unit II Chap 9)

REFERENCES
1. Kaveh Pahlavan, Prasanth Krishnamoorthy, "Principles of Wireless Networks", PHI/Pearson Education, 2003.
2. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer, New York, 2003.
3. Hazysztof Wesolowshi, "Mobile Communication Systems", John Wiley and Sons Ltd, 2002.

EBI6ET103 - DISTRIBUTED COMPUTING

3   2   0   4

UNIT I – FUNDAMENTALS

Introduction to distributed computing system, Evolution, Different models, Gaining popularity, Definition, Issues in design, DCE, Message Passing – Introduction, Desirable feature of a good message passing system, Issues in IPC, Synchronization, Buffering, Multi datagram, Process addressing, Failure handling, Group communication.

UNIT – II RPC

Introduction, RPC model, transparency of RPC, Implementing RPC mechanism, Stub generation, RPC messages, Marshalling arguments and results, Server management, parameter-passing semantics, Call semantics, communication protocols for RPCs, Complicated RPC, Client-server binding, exception handling, security, Special types of RPC, RPC in heterogeneous environments, Lightweight RPC, Optimization for better performance, case studies – Sun RPC, DCE, RPC.

UNIT – III DISTRIBUTED SHARED MEMORY AND SYNCHRONIZATION

Introduction, General architecture of DSM systems, Design and implementation issues of DSM, Granularity, Structure of shared memory space, consistency model, Replacement strategy, Threshing, Different approaches to DSM, Advantages of DSM, Clock synchronization, Event ordering, Mutual exclusion, Deadlock, Election algorithm.

UNIT – V DFS AND SECURITY

Desirable features of good DFS, Features of a good global scheduling algorithm, Task assignmnet approach, Load-balancing approach, Load sharing approach, Process migration, Threads

UNIT – V DFS AND SECURITY

Desirable features of good DFS, File models, File models, File accessing models, File sharing semantics, File caching schemes, File replication, Fault tolerance, Atomic transaction, Design principles, Case Study : DCE DFS, Potential attacks to computer System, Crytography, Authentication, Access control, Digital signatures, Design principles, DCE Security Service.

TEXT BOOKS

1. PRADEEP K.SINGHA, Distributed Operating System – PHI.
2. ANDREW S.TENENBAUM Modern Operating System – 2nd Edition, PHI, 1991

EBI6ET104 - OBJECT ORIENTED SYSTEM ANALYSIS & DESIGN

3	2	0	4

UNIT – I

The Object Model: The evolution of the object model - Elements of the object model - applying object model. Class and Objects: The nature of an object Relationships among object.

UNIT – II

Class and Objects: The nature of the class - Relationship among classes- The interplay of classes and objects-on building quality classes and objects.

Classification: The importance of proper classification-identifying proper classes and objects-key abstraction mechanism.

UNIT – III

Introduction - UML - Metamodel - Analysis and design - more information. Outline Development Process: Overview of the process-Inception - Elaboration-construction-refactoring-patterns-transmission-iterative development -use cases.

UNIT – IV

Class diagram: Essentials. Class Diagram: Advanced.

UNIT – V

Interaction diagram-package diagram-state diagram-activity diagram-deployment diagram - UML and programming.

TEXT BOOKS:

1. Grady Booch, "Object Oriented Analysis and Design", Addison Wesley
2. Martin Fowler, Kendall Scott, "UML Distilled", Addision Wesley

REFERENCE BOOKS:

1. Erich Gama, "Design Pattern", Addision Wesley.
2. James Rumbough Etal, "Object Oriented Modelling and Design "
3. Ivar Jacobson, "Object Oriented Software Engineering, A Use Case Driven Approach", Addison Wesley, 1994.
4. Eriksson, "UML Tool Kit", Addison Wesley.

EBI6ET105 - CRYPTOGRAPHY AND NETWORK SECURITY

3	2	0	4

UNIT I
INTRODUCTION

OSI Security Architecture - Classical Encryption techniques – Cipher Principles – Data Encryption Standard – Block Cipher Design Principles and Modes of Operation - Evaluation criteria for AES – AES Cipher – Triple DES – Placement of Encryption Function – Traffic Confidentiality

UNIT II
PUBLIC KEY CRYPTOGRAPHY

Key Management - Diffie-Hellman key Exchange – Elliptic Curve Architecture and Cryptography - Introduction to Number Theory – Confidentiality using Symmetric Encryption – Public Key Cryptography and RSA.

UNIT III
AUTHENTICATION AND HASH FUNCTION

Authentication requirements – Authentication functions – Message Authentication Codes – Hash Functions – Security of Hash Functions and MACs – MD5 message Digest algorithm - Secure Hash Algorithm – RIPEMD – HMAC Digital Signatures – Authentication Protocols – Digital Signature Standard

UNIT IV
NETWORK SECURITY

Authentication Applications: Kerberos – X.509 Authentication Service – Electronic Mail Security – PGP – S/MIME - IP Security – Web Security.

UNIT V
SYSTEM LEVEL SECURITY

Intrusion detection – password management – Viruses and related Threats – Virus Counter measures – Firewall Design Principles – Trusted Systems.

TEXT BOOK

1. William Stallings, "Cryptography And Network Security – Principles and Practices", Prentice Hall of India, Third Edition, 2003.

REFERENCES

1. Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, 2003.
2. Bruce Schneier, "Applied Cryptography", John Wiley & Sons Inc, 2001.
3. Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", Third Edition, Pearson Education, 2003

EBI6BT106- EMBEDDED SYSTEMS

3	0	0	3

UNIT I
INTRODUCTION TO EMBEDDED SYSTEMS

Definition and Classification – Overview of Processors and hardware units in an embedded system – Software embedded into the system – Exemplary Embedded Systems – Embedded Systems on a Chip (SoC) and the use of VLSI designed circuits.

UNIT II
DEVICES AND BUSES FOR DEVICES NETWORK

I/O Devices - Types and Examples of device I/O devices – Synchronous - Iso-synchronous and Asynchronous Communications from Serial Devices - Examples of Internal Serial-Communication Devices - UART and HDLC - Parallel Port Devices - Sophisticated interfacing features in devices ports- Timer and Counting Devices - 'I^2C', 'USB', 'CAN' and advanced I/O Serial high speed buses-ISA, PCI, PCI-X, cPCI and advanced buses.

UNIT III
PROGRAMMING CONCEPTS :

Programming in assembly language (ALP) vs. High Level Language - C Program Elements: Header and source files, preprocessor directives, Macros and functions, Data types, data structures, modifiers, statements, loops and pointers-Embedded   programming in C++ - C program compiler and cross compiler – Optimization of memory needs.

INTER PROCESS COMMUNICATION AND SYNCHRONISATION : Multiple processes in an application – Problem of sharing data by multiple tasks and routines - Inter process communication.

UNIT IV [
REAL TIME OPERATING SYSTEMS (RTOS)

Operating System Services– I/O Subsystems – Real time and Embedded system operating systems - Need of an ideal RTOS - Interrupt Routines in RTOS environment - RTOS Task scheduling models: Co-operative Round Robin Scheduling, Cyclic Scheduling with Time Slicing – Preemptive Scheduling – Critical Section Service by a Preemptive Scheduler – Fixed (Static) Real time scheduling of tasks - Performance metrics in scheduling models

UNIT V
RTOS   PROGRAMMING TOOLS

Micro C/OS-II RTOS : System Level Functions – Task Service Functions – Time Delay Functions – Memory Allocation Related Functions – Semaphore Related Functions – Mailbox Related Functions – Queue Related Functions Case Study of coding for an automatic chocolate vending machine using MUCOS RTOS –Case Definition, Multiple Tasks and their functions – Creating a list of tasks, Functions and IPCs – Exemplary Coding (steps only)

TEXTBOOKS :

1. Rajkamal, Embedded Systems Architecture, Programming and Design, TATA McGraw-Hill, First reprint Oct. 2003

REFERENCES :
 1. Steve Heath, Embedded Systems Design, Second Edition-2003, Newnes,
 2. .David E.Simon, An Embedded Software Primer, Pearson Education Asia, First Indian Reprint 2000.
 3. Wayne Wolf, Computers as Components; Principles of Embedded Computing System Design – Harcourt India, Morgan Kaufman Publishers, First Indian Reprint 2001
 4. .Frank Vahid and Tony Givargis, Embedded Systems Design – A unified Hardware /Software Introduction, John Wiley, 2002.

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UNIT I

A.**?gvaod:** B.**yajauvao-d:** C.**saamavaod:** & **Aqava-vaod:**

UNIT II

A.**YaD=\gaaina** B.**]pinaYad:** C.**dSa-naaina**

UNIT III

A.**puraNaaina** B.**[ithasa:** C.**stao~aiNa**

UNIT IV

A.**kailadasa:** B.**Baasa:** C.**kaOiTlya:**

UNIT V

A.**Sa=\kracaaya-:** B.**ramaanaujaacaaya-:** C.**maQvaacaaya-:**

INDIAN CULTURE - V

Part I

Unit I – Art forms as cultural expression; technology & aesthetics; their relation to the social tructure.

Unit II – Evolution of religious structures & architecture in Indian; different early schools and art centers; important other secular structures.

Unit III – Development of regional styles in Indian art & architecture; important features of Nagara, Dravida & Vesara styles in temple architecture. Sculpture, Iconography and Paintings – different centers and contribution on Indian culture.

Part II

Unit IV – Significance of Stapatya veda; Silpa and Vastu Sastra – significance of vastu in architecture. Vishvakarma, Mayamata, Manasara, Samarangana, Stapatya, etc., personalities and their contribution in Indian Architecture.

Unit V – the decorative art & craft; precious stones & metal; textiles & carpets; calligraphy & other important works;

Reference Books

1. Banerji, J.N. 1941. *The Development of Hindu Iconography*. University of Calcutta. Calcutta.

2. Gopinath Rao, T.R. 1914. *Elements of Hindu Iconography*. Vol I & II.

3. Meister, M.W. (ed) 1983. *Encyclopaedia of Indian Temple Architecture.* American Indstitute of Indian Studies. University of Pennsylvania Press. Philadelphia.

   4. Sukla, D.N. 1993. *Vastu-Sastra. Hindu Science of Architecture*. Munshiram Manoharlal Publishers Pvt. Ltd. New Delhi.
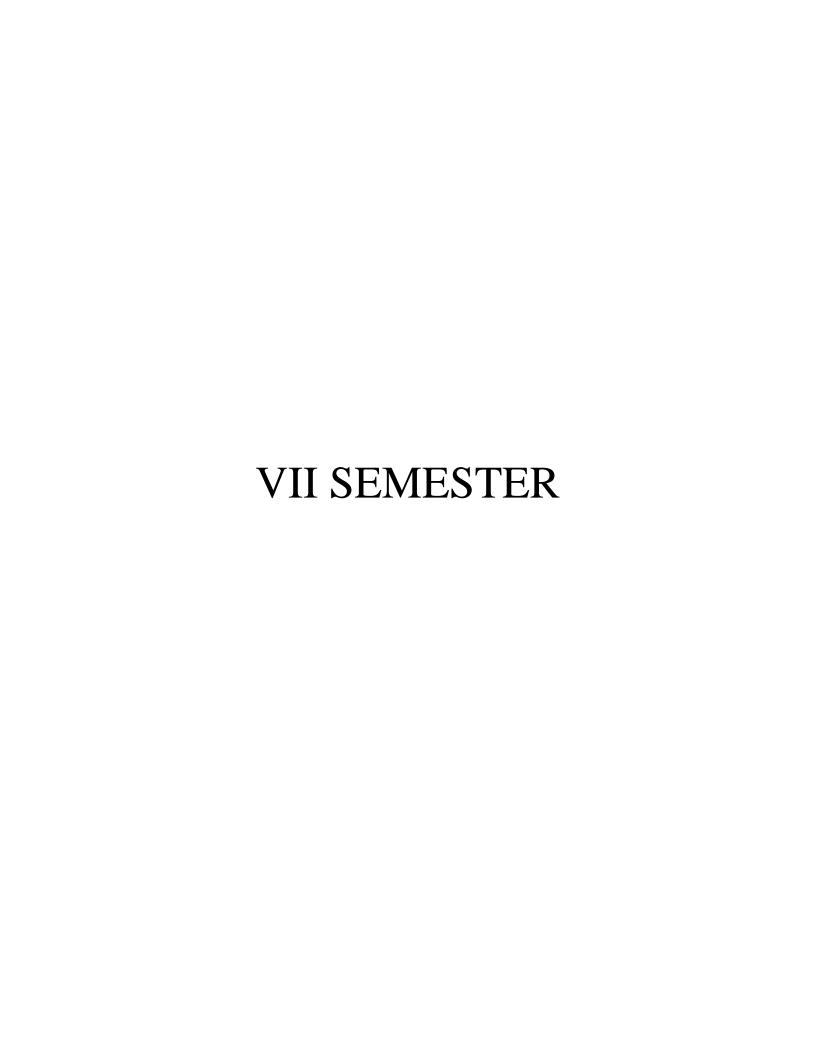
EBI6EP101 - NETWORK LAB USING LINUX

0	0	4	2

Using C/C++

Computer Networks Lab (Using C++ & Java)

1.Write a program to simulate Sliding window protocol.

2.Write a program to simulate shortest path algorithm.

3.Write a program to simulate Distance vector Routing algorithm.

4.Write a program to know your IP Address and to check whether it is Broadcasting address or not.

5. Write a program to establish a TCP Socket connection between 2 system and communicate "Hello" message.

6. Design a Broadcasting server to send "hello" message to 5 other clients.

7. Design a searching tool to check for the availability of a file in server.

8. Design FTP to download a given file from another system using TCP Sockets.

9.Design a simple chat application for communicating between 2 systems using swing components and DatagramSockets.

10.Write a Program to demonstrate Multicasting.

VII SEMESTER

EBJ7ET101 - SOFTWARE ENGINEERING

| | 3 | 2 | 0 | 4 |

UNIT I

Introduction : Evolving role of software- Software characteristics , components and its applications-General view of software engineering –software process models.

UNIT II

System Analysis : Requirements analysis-Analysis principles-Prototyping-Software Requirement specification – data modeling, functional modeling and behavioral Modeling, cohesion, coupling, design documentation.

UNIT III

Design concepts : Design and software quality. Design concepts : Abstraction, Refinement, modularity and software architecture control hierarchy, structural partitioning and information hiding. Effective modular design: functional independence cohesion And coupling – design documentation.

UNIT IV

Design Methods : Data design – Architectural design process : transform mapping And transaction mapping – interface design – procedural design. Design for Real – Time Systems : System considerations-real time systems-analysis and simulation of real time Systems.

UNIT V

Software Testing Methods : Software testing fundamentals . White Box Testing:Basis path testing and control structure testing-black box testing-testing for specialized Environments. Software Testing Strategies : A strategic approach to software testing- Unit testing-integration testing-validation testing-system testing.

TEXT BOOK

1. R.S .Pressman , "Software Engineering", Tata McGraw Hill.

REFERENCE BOOKS

1. Watts Humphrey, Managing the Software Process, Addison – Wesley Publishing Company, Reading MA,1989.

2. Watts Humphrey, Characterizing the Software Process : A Maturity Framework – IEEE Software, March 1988.Watts Humphrey,W.L.Sweet , A Method for accessing The Software Engineering

3. Capabilities of Contractors, Technical Report, CMU/SEI-87-TR-23,ESD/TR-87-186.

4. Software Engineering – I am sommerville 6th Edition

EBJ7ET102 - PROFESSIONAL ETHICS AND HUMAN VALUE
3   2   0   4

UNIT I
HUMAN VALUES

Morals, Values and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage – Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Character – Spirituality

UNIT II
ENGINEERING ETHICS

Senses of 'Engineering Ethics' - variety of moral issued - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy – Models of Professional Roles - theories about right action - Self-interest - customs and religion - uses of ethical theories.

UNIT III
ENGINEERING AS SOCIAL EXPERIMENTATION

Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study

UNIT IV
SAFETY, RESPONSIBILITIES AND RIGHTS

Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the three mile island and chernobyl case studies.
Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination.

UNIT V
GLOBAL ISSUES

Multinational corporations - Environmental ethics - computer ethics - weapons development - engineers as managers-consulting engineers-engineers as expert witnesses and advisors -moral leadership-sample code of Ethics like ASME, ASCE, IEEE, Institution of Engineers (India), Indian Institute of Materials Management, Institution of electronics and telecommunication engineers (IETE),India, etc.

TEXT BOOK

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw-Hill, New York 1996.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

REFERENCES

1. Charles D. Fleddermann, "Engineering Ethics", Pearson Education / Prentice Hall, New Jersey, 2004 (Indian Reprint)
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, "Engineering Ethics – Concepts and Cases",Wadsworth Thompson Learning,United States,2000 (Indian Reprint now available)
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.

EBI7ET103 - COMPONENT BASED TECHNOLOGY

3   2   0   4

UNIT I
INTRODUCTION

Software Components – objects – fundamental properties of Component technology – modules – interfaces – callbacks – directory services – component architecture – components and middleware

UNIT II
JAVA BASED COMPONENT TECHNOLOGIES

Threads – Java Beans – Events and connections – properties – introspection – JAR files – reflection – object serialization – Enterprise Java Beans – Distributed Object models – RMI and RMI-IIOP

UNIT III
CORBA COMPONENT TECHNOLOGIES

Java and CORBA – Interface Definition language – Object Request Broker – system object model – portable object adapter – CORBA services – CORBA component model – containers – application server – model driven architecture

UNIT IV
. NET BASED COMPONENT TECHNOLOGIES

COM – Distributed COM – object reuse – interfaces and versioning – dispatch interfaces – connectable objects – OLE containers and servers – Active X controls – .NET components - assemblies – appdomains – contexts – reflection – remoting

UNIT V
COMPONENT FRAMEWORKS AND DEVELOPMENT

Connectors – contexts – EJB containers – CLR contexts and channels – Black Box component framework – directory objects – cross-development environment – component-oriented programming – Component design and implementation tools – testing tools - assembly tools

TEXT BOOK

1.   Clemens Szyperski, "Component Software: Beyond Object-Oriented Programming", Pearson Education publishers, 2003

REFERENCES

1.   Ed Roman, "Mastering Enterprise Java Beans", John Wiley & Sons Inc., 1999.
2.   Mowbray, "Inside CORBA", Pearson Education, 2003.
3.   Freeze, "Visual Basic Development Guide for COM & COM+", BPB Publication, 2001.
4.   Hortsamann, Cornell, "CORE JAVA Vol-II" Sun Press, 2002.

EBI7ET104 - DOT NET TECHNOLOGIES

3   2   0   4

UNIT I

Programming Models – Introduction to .NET Framework – Evolution of .NET technologies - CTS, CLS, CLR, MSIL, JIT, Assemblies, .NET Security Model – Introduction to Base Class Library
 Introduction to VB.NET - Working with Visual Studio IDE – IDE Components –Environment Options
VB.NET Fundamentals – Variables – Data Types – Arrays – Control Flow Statements – Modular
Coding – Subroutines – Functions – Argument-Passing

UNIT II

Classes – Instance Fields – Constructors – Properties – Methods – Object – Inheritance – Static
Classes – Interfaces
Exception Handling– Need – Models – Statements – Creating Exception Classes
Collections – Arrays – ArrayList Collection – HashTable Collection – SortedList Class – IEnumerator
and IComparer Interfaces
Handling Strings, Characters and Dates – File Class - Directory Class – Accessing Files – FileStream–
StreamWriter– StreamReader– BinaryWriter- Binary Reader

UNIT III
Windows Forms – Form Properties – Form Events - Building Dynamic Forms at Runtime
Introduction to Components and controls – Adding Components and controls to forms – Layout and
Grouping – Responding to User Inputs – Mouse and Keyboard Events – Designing Menus – Building
MDI Applications- Reading Input through Controls – Presentation and Information Controls – Common
Dialog Controls – RichTextBox Control - Creating Windows Installer

UNIT IV

ADO.NET Architecture – DataSet – DataGrid Control- Data Binding – DataAdapter – Command
Objects – DataReader - Performing Updates
Introduction to Web Programming – Building Web Applications – Web Controls - Interacting with Web
Applications – Maintaining State – ASP.NET Objects – Page Object – Response Object – Request
Object – Server Object – Deploying ASP.NET Applications

UNIT V

Data-Bound Web Controls – Simple Data binding – Binding to DataSets – Customizing dataGrid
Control
Building and Consuming Web Services – ASP.NET Web Service Projects
Theoretical Introduction to C# and its Comparison with VB

TEXT BOOKS:

1. VB.NET Complete Reference – Jeffrey R. Shapiro – Tata McGrawHill – 2006

2. Mastering Visual Basic. NET – Evangelos Petroutsos – BPB Publications - 2005

REFERENCE BOOKS:

1. ADO.NET Complete Reference – Michael Otey , Denielle Otey, Tata McGrawHill, 2005

2. Mastering Visual Basic. NET Database Programming– Evangelos Petroutsos , Ali Bilgin– BPB
   Publications – 2002

3. Pro C# with .NET 3.0 – Andrew Troelsen – Special Edition 2007

EBI7EP101 - DOT NET LAB

0	0	4	2

1. Familiarization with IDE

2. Programming Console applications using VB.NET covering all aspects of VB.NET Fundamentals

3. Object oriented programming using VB.NET covering objects, Inheritance, Polymorphism, Constructors, Static Classes, Interfaces

4. Programmes to illustrate Exception Handling concepts

5. Programmes to illustrate use of Collections

6. Programmes to perform File I/O Operations

7. Programming Windows applications using VB.NET covering all major controls and components, Menus, MDI, Event Handling

8. Creating windows installer

9. Programmes to interact with Database from a Windows Desktop Application

10. Programming to Build web applications using web controls, maintaining state

11. Deploying ASP.NET web application

12. Programmes to interact with Database from a Web Application using appropriate controls

13. Programmes to create and consume a Web Service

EBI7EP102 - SOFTWARE DEVELOPMENT LAB USING CASE TOOLS

0   0   4   2

Prepare the following documents for two or three of the experiments listed below and develop the software engineering methodology.

1.   Program Analysis and Project Planning.
        Thorough study of the problem – Identify project scope, Objectives, Infrastructure.
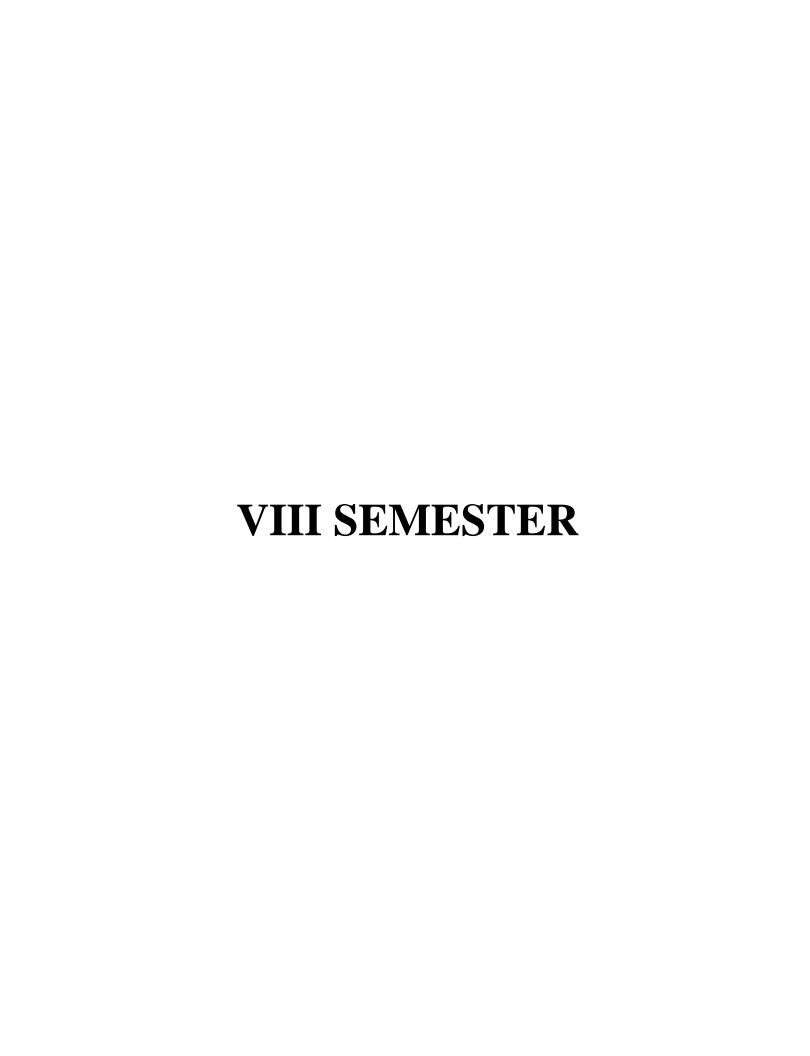
2.   Software requirement Analysis
        Describe the individual Phases / Modules of the project, Identify deliverables.

3.   Data Modeling
        Use work products – Data dictionary, Use diagrams and activity diagrams, build and test lass diagrams, Sequence diagrams and add interface to class diagrams.

4.   Software Development and Debugging

5.   Software Testing
        Prepare test plan, perform validation testing, Coverage analysis, memory leaks, develop test case hierarchy, Site check and Site monitor.

Suggested List of Applications:

1. Student Marks Analyzing System
2. Quiz System
3. Online Ticket Reservation System
4. Payroll System
5. Course Registration System
6. Expert Systems
7. ATM Systems
8. Stock Maintenance
9. Real-Time Scheduler
10. Remote Procedure Call Implementation

VIII SEMESTER

EBI8ET101 - ENGINEERING ECONOMICS AND MANAGEMNET

3   2   0   4

UNIT – I

Nature of management and its process – Contribution of Taylor and Fayol to management – Functions and principles of management –Industrial ownership – Types, formation, merits and demerits – Management by objective , Management by exception.

UNIT – II

Planning – Nature & purpose, Kinds of plans – Decision making process and kinds of decision – Organization process – organization structure, delegation, Decentralization, staffing.

UNIT – III

Direction and control : Motivation process and theory – Leadership – Leadership style.Communication – process and methods – barriers , coordination – features and Techniques,
 Control process and methods.

UNIT – IV

Basic economic concept – Importance of economic in engineering – Economic and technical decisions – Demand and supply – Factors influencing demand – Elasticity of demand – demand forecasting – Competition.
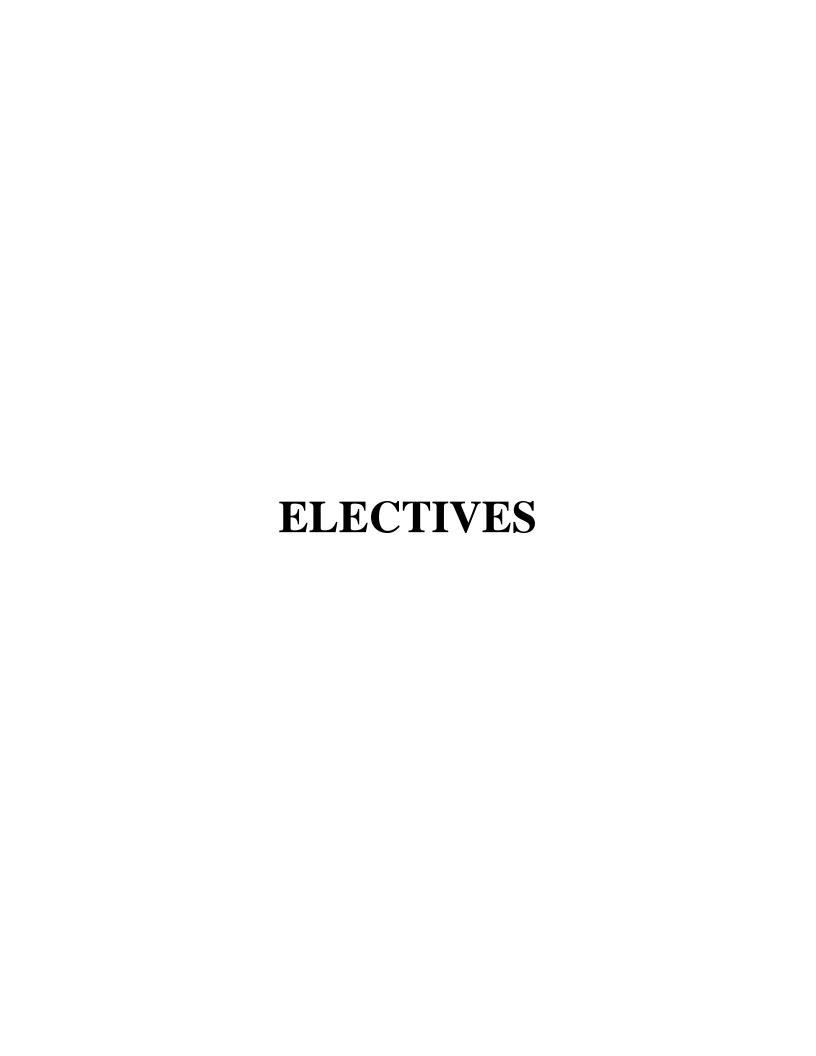
UNIT – V

Actual cost and opportunity cost – Marginal cost – Incremental cost and sunk cost, Fixed and variable cost – Short-run long-run cost – Cost output relationship – Price fixation – Pricing policies – Pricing methods. Break even analysis.

TEXT BOOKS:

1. L.M..Prasad Principles & Practice of Management
2. Varshney and Maheswari, Managerial Economics.

REFERENCE BOOKS :

1. Dewett, Modern Economic theory Shyamlal charitable Trust New Delhi.
2. B.Kumar, Industrial Engineering Khanna.
3. Harold Knoontz ,Heinz Weihrich – Essentials of Management, TATA McGRAW Hill
4. Engineering Economics and Management by R.Senapathy ARS publications

ELECTIVES

LIST OF ELECTIVES

VII Semester

Sl.No	Code	Subject
1	A	Management Information System
2	B	Network Programming and Management
3	C	Online and Real Time Systems
4	D	Natural Language Processing
5	E	User Interface Design
6	F	Visual Programming
7	G	Artificial Intelligence
8	H	Introduction to Automata Theory
9	I	Satellite Communication
10	J	Digital Image Processing
11	K	Theory of Computation
12	L	Advanced Java Programming

VIII Semester

Sl.No	Code	Subject
13	M	Grid Computing
14	N	Neural Networks
15	O	Software Agents
16	P	E-Commerce
17	Q	Optical Communication
18	R	Applied Graph Theory
19	S	VLSI
20	T	Information System Design
21	U	Total Quality Management
22	V	Programming C# 3.0
23	W	Software Testing
24	X	Telecommunication Systems

A - MANAGEMENT INFORMATION SYSTEM

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UNIT I

Definition of MIS- Data Processing , Decision Support Systems – Information Resources Management , End user Computing Managerial Accounting , OR Management theory Sub Systems of MIS.
Data Base Query Languages, Report generators , Statistical Packages , Modeling Languages , V.H.L Language. Batch system, On Line system.
Communication systems, Front End Processors, LAN , WAN , Distributed Systems.

UNIT II

Logical Data Concepts , Sequencing of Data , Types of Files , Data Bases .Serial Access and Direct Access devices.
Sequential , Hashed and indexed File Organization – Data Base Organization – single flat File – Hierarchical , Network, Relational DB Structures. Transaction Processing – Control and Retrieval .
Word and Text Processing . Document Filing Computer Graphics , Composition   and Reproduction , Document Distribution , Fascimille Transmission , Message Systems , Information Processing Control- Availability Controls.

UNIT III

Decision Making Process – Problem Formulation _ programmed Vs Non Programmed Decision – Criteria for Decision Making , Classical Economical Model – Administrative Model – Resolution of Conflict – Uncertainty Avoidance – Problematic Search – Incremental Decision Making – optimization Techniques under certainty – Pay off Matrices – Decision Trees – Games Theory – Statistical Inference – documenting and Communicating Decision rules – Support for Decision making phases.

UNIT IV

Definition of Information – Redundancy – Sending and Receiving efficiency – utility of information – Errors and Bias -Value of Information and Sensitivity Analysis - Information system design.
Types of system – Subsystem- Preventing System entropy – System Stress – Organizational efficiency and effectiveness
Use of subsystems in information System Design – Decoupling of information systems – Project Management.

UNIT V

Hierarchy of planning – planning models – Computational support for planning – organizational structure Implementations and Management Theory in System Design – Decision Support systems and Expert systems – Computational support of intelligence , Design and Choice Phases – Spread sheet Processor – Analysis package- Model Generator – Planning Software System – Data Base Query Systems for planning.

TEXT BOOK:
1. Gordon B. Davis And Maggrethe H . Olson , Management Information Systems , Mc Graw Hill International Edition - Second Edition , 1998

REFERENCE BOOK :
1. Rober G . Mudrick , Joel E . Ross And James R . CIAGGET , Information Systems For Modern Management , 33rd Edition , 1992 , Prentice Hall Of India (P) Ltd ., Eastern Economy Edition .

2. Jerome Kanter Management Information Systems, 3rd Edition , 1990 . Prentice Hall Of India Ltd. , Eastern Economy Edition

B - NETWORK PROGRAMMING AND MANAGEMENT

3   2   0   4

UNIT I
ELEMENTARY TCP SOCKETS

Introduction to Socket Programming – Overview of TCP/IP Protocols –Introduction to Sockets – Socket address Structures – Byte ordering functions – address conversion functions – Elementary TCP Sockets – socket, connect, bind, listen, accept, read, write, close functions – Iterative Server – Concurrent Server.

UNIT II
APPLICATION DEVELOPMENT

TCP Echo Server – TCP Echo Client – Posix Signal handling – Server with multiple clients – boundary conditions: Server process Crashes, Server host Crashes, Server Crashes and reboots, Server Shutdown – I/O multiplexing – I/O Models – select function – shutdown function – TCP echo Server (with multiplexing) – poll function – TCP echo Client (with Multiplexing)

UNIT III
SOCKET OPTIONS, ELEMENTRY UDP SOCKETS

Socket options – getsocket and setsocket functions – generic socket options – IP socket options – ICMP socket options – TCP socket options – Elementary UDP sockets – UDP echo Server – UDP echo Client – Multiplexing TCP and UDP sockets – Domain name system – gethostbyname function – Ipv6 support in DNS – gethostbyadr function – getservbyname and getservbyport functions.

UNIT IV
ADVANCED SOCKETS

Ipv4 and Ipv6 interoperability – threaded servers – thread creation and termination – TCP echo server using threads – Mutexes – condition variables – raw sockets – raw socket creation – raw socket output – raw socket input – ping program – trace route program.

UNIT V
SIMPLE NETWORK MANAGEMENT

SNMP network management concepts – SNMP management information – standard MIB's – SNMPv1 protocol and Practical issues – introduction to RMON, SNMPv2 and SNMPv3.

TEXT BOOKS

1.   W. Richard Stevens, "UNIX NETWORK PROGRAMMING Vol-I" Second Edition, PHI / Pearson Education, 1998. (Units – I, II, III & IV.) (Chapter – 1-10, 23, 25)

2.   William Stallings, "SNMP, SNMPv2, SNMPv3 and RMON 1 and 2", Third Edition, Addison Wesley, 1999. (Unit - V) (Chapter – 4-7)

REFERENCE

1.   D.E. Comer, "Intrenetworking with TCP/IP Vol- III", (BSD Sockets Version), second Edition, PHI, 2003.

C - ONLINE AND REAL TIME SYSTEMS

3	2	0	4

UNIT I

Introduction – Terms and concepts – Characteristics of some typical systems – process Control, Business systems, Transactions systems, Data Acquisition systems.Types of systems –simplex , Master Slave , Duplexed , Shared file , Multiprocessor systems.

UNIT II

Hardware requirements-Processor sub system , interrupts , communications network, terminal subsystem, disk storage .Factors in selection – System costs and specifications – Hard ware configurations.

UNIT III

Design Guidelines – Operational models-Interrupts processing, Major cycle models: Applications to message switching system.
Average throughout rate capability calculation using memory disk-Effect of buffer size variations , variable record lengths and multiprogramming .
Design calculations- Mathematical modeling , Simulations , Statistics Generations using sampling and event stream approaches .

UNIT IV

Design of data communications and terminals – Error Characteristics , Error control, Achievable throughput ,Terminals
Calculations . Cost performance criteria   and trade offs.
Applications – Stock Brokerage System   , Message Switching System, Medical Online Data Base System.

UNIT V

Applications Program- Concepts , Objectives , modular programming , Overlap of CPU and I/O , minimize disk accesses.
File organization concepts –Directories buffering , Simultaneous access , File security , File recovery.

TEXT BOOK :

1. S.Stimler , Real Time Data Processing Systems , Mc Graw Hill , 1969.

REFERENCE BOOK :

1.   E.Yourdon, Design of On-Line Computer System , Prentice Hall , 1972.

D - NATURAL LANGUAGE PROCESSING.

3	2	0	4

UNIT I

Introduction-The issues and difficulties in natural language processing-Linguistics and computational linguistics language understanding and generation understanding of spoken , written and textual information.

UNIT II

Syntactic parsing – English grammar-Structure of the sentence-Words and organization of the lexical-Context free and context sensitive grammar-Transformational grammar-The role of syntax analysis in semantics ATN 's –Definite class grammar and WASP parser.

UNIT III

Semantic interpretation- The conceptual dependency model for semantic representation – Semantic networks- Frames and scripts-Semantics in the lexicon.

UNIT IV

Discourse interpretation-The interconnections between Pragmatics-Pragmatics in discourse analysis-Speech acts plan-Based theory of speech acts- Analysing intention in utterances – The representations and the use of focus in understanding discourse- Focusing in comprehension of anaphora.

UNIT V

Generation - Strategies   for   generation – Planning English referring expressions- KING, a natural language generation systems.
Typical systems – ELIZA – Baseball – GUS – PARRY – LADDER - SOPHIE & POET current trends in NLP

REFERENCE BOOKS:

1. James Allen Benjamin Cummings , Natural Language Understanding.
2. Grosz , Jones And Webber ,Reading in Natural Language Processing ,Morgan Kanfamann Publisher,1986.
3. Windgrad ,Language as a Congnitive Process, Syntax, Addison Wesley publication ,1983.
4.   Popov , Talking with Computer In Natural Language , Springer - Verlag ,1986.
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E - USER INTERFACE DESIGN

3 2 0 4

UNIT I

Introduction-Importance-Human-Computer interface-characteristics of graphics interface-Direct manipulation graphical system - web user interface-popularity-characteristic & principles.

UNIT II

User interface design process- obstacles-usability-human characteristics in design - Human interaction speed-business functions-requirement analysis-Direct-Indirect methods-basic business functions-Design standards-system timings - Human consideration in screen design - structures of menus - functions of menus-contents of menu-formatting -phrasing the menu - selecting menu choice-navigating menus-graphical menus.

UNIT III

Windows: Characteristics-components-presentation styles-types-managements-organizations-operations-web systems-device-based controls: characteristics-Screen -based controls: operate control - text boxes-selection control-combination control-custom control-presentation control.

UNIT IV

Text for web pages - effective feedback-guidance & assistance-Internationalization-accesssibility-Icons-Image-Multimedia -coloring.

UNIT V

Windows layout-test :prototypes - kinds of tests - retest - Information search - visualization - Hypermedia - www - Software tools.

TEXTBOOK

1. Wilbent. O. Galitz ,"The Essential Guide to User Interface Design", John Wiley& Sons, 2001.

REFERENCES

1. Ben Sheiderman, "Design the User Interface", Pearson Education, 1998.
2. Alan Cooper, "The Essential of User Interface Design", Wiley – Dream Tech Ltd., 2002.

F - VISUAL PROGRAMMING

3	0	2	4

UNIT – I

Windows Programming: GUI Concept – Hungarian Notation, Data Types- handles, Message Driven Architecture, Message processing & loop, GDI- Brush, Pen, Front Cursor, Menu, keyboard & Mouse Handling.

UNIT – II

WINAPI Functions: Displaying Text and Graphics, Dialog Boxes controls, WinMain and WndProc procedures, files, clipboard, printer handling, DDE, DLLs, OLE – COM, ODBC, Windows registry.

UNIT – III

Visual Basic 6.0: Introduction to Visual Basic 6.0, VB programming Environment, Working with Forms, variables, procedures and control structures, Arrays, constants, data type conversion, VB Built-in functions, date and Time Functions, Comparison and Relational Operators.

Working with Controls: Creating and Using Controls, Using Text Box Controls, Label Control, Option Button Control, ListBox and Combo Box Controls, ScrollBar Control, Working with Control Arrays.

UNIT – IV

Menus, Mouse Events and Dialog Boxes: Menu Interface, Using the Menu Editor, Writing a program, Adding a separator bar and shortcut Keys, Making Menu Controls Invisible.

Mouse Events: Graphical Mouse Application, Mouse Move application, Dragging and Dropping. Dialog Boxes: Mode and modeless Dialog Boxes, Predefined Dialog Boxes, custom Dialog Control, using the common Dialog Control. Graphics, MDI and Flexgrid: Fundamentals of Graphics, Using Graphical Controls, Using Graphics Methods, Multiple Document Interface, Creating an MDI Application, Using the FlexGrid.

UNIT – V

ODBC: Working with DAO, RDO and ADO Controls and Objects - opening a database, working with records - Using DBGrid Control – Data reports and Crystal Reports

TEXT BOOKS:

1. Herbert Schieldt, "Windows 98 Programming from Ground Up", Tata McGraw Hill
2. Cary Cornell , " Visual Basic 6 for ground Up",Tata Mc Graw Hill, 1997.
3. Visual Basic 6.0 Black Book by Comdex Publishing.

G - ARTIFICIAL INTELLIGENCE

UNIT I

INTRODUCTION

Definition of AI-Foundations-History-Intelligent Agents-Perception and Language Processing-Problem Solving- Searching-Heuristic Search-Game Playing.

UNIT II

LOGIC AND REASONING

Agents that reason logically - First order logic - Inference in first order logic - Logical reasoning.

UNIT – III

KNOWLEDGE REPRESENTATION

Semantic Nets and Description matching-Frames-Inheritance and common sense Rules-Rule Chaining

UNIT – IV

REASONING WITH INCOMPLETE AND UNCERTAIN KNOWLEDGE

Uncertainty - Probabilistic Reasoning Systems- Making simple and complex decisions- Nonmonotonic reasoning and Truth Maintenance.

UNIT V

PLANNING AND LEARNING

Planning-Representation for planning-Partial order planning -Conditional planning-Replanning agent-Learning - Analysing differences - Explaining experience - Correcting mistakes

TEXT BOOKS.

1.   Elain Rich and Kevin Knight," Artificial Intelligence", Tata McGraw – Hill Publishing Company Limited, New Delhi, 1995.
2.   Stuart Russel and Peter Norvig, Artificial Intelligence – A Modern Approach, Prentice Hall, 1995.
3.   Patrick Henry Winston," Artificial Intelligence", Addison Wesley, Third edition, 2000.

REFERENCES BOOKS:

1. George F Luger, Artificial Intelligence, Pearson Education, 4th edition, 2001.
2. Engene Charniak and Drew Mc Dermott," Introduction to Artificial intelligence Addison Wesley 2000.
3. Nils J. Nilsson, "Principles of Artificial Intelligence", Narosa Publishing House, 2000.
4. Dan W. Patterson, "Introduction to Artificial Intelligence and Expert systems", Prentice hall of India private limited, 1992.

H - INTRODUCTION TO AUTOMATA THEORY

3   2   0   4

UNIT I
(TREES AND FUNDAMENTAL CIRCUITS)
Trees - Properties of trees - Pendant vertices - Distance and centers in a tree - Rooted and binary trees - Counting trees - Spanning trees - Spanning trees in a weighted graph.

UNIT II
Deterministic finite acceptors - Non deterministic finite acceptors - Equivalence of deterministic and non deterministic finite acceptors - Regular expression - Connection between regular expressions and regular languages - Closure properties of regular languages - Identifying some non regular languages using pumping lemma.

UNIT III
(CONTEXT FREE LANGUAGES, SIMPLIFICATIONS AND NORMAL FORMS)
Context free grammars - Parsing and ambiguity - Context free grammars and programming languages - Simplifications - Two normal forms - Membership algorithm for CFL.

UNIT IV
(PUSHDOWN AUTOMATA AND PROPERTIES OF CFL)
Non deterministic pushdown automata -PA and CFL - Deterministic PA and deterministic CFL - Properties of CFL - Decision algorithms - A pumping lemma for CFL - A pumping lemma for linear languages.

UNIT V
(TURING MACHINES)
The standard turing machine - Minor variations on the turing machine theme - Non deterministic turing machines - A universal turing machine - linear bounded automata.

TEXT BOOKS
1. Narsingh Deo, Graph Theory (With Applications to Engineering and Computer Science), Prentice Hall of India, 2000. Unit I : Chapter 3 (3.1 - 3.7, 3.10)
2. Peter Linz, An introduction to formal languages and automata, Narosa Publishing House.
   Unit II : Chapter 2 (All Sections)
        Chapter 3 (3.1 - 3.2)
        Chapter 4 (4.1 - 4.3)
   Unit III : Chapter 5 (5.1 - 5.3)
   Unit IV : Chapter 6 (6.2)
        Chapter 7 (7.1 - 7.4)
        Chapter 8 (8.1)
   Unit V   : Chapter 9 (9.1)
        Chapter 10 (10.1, 10.3 - 10.5)

REFERENCES

1. John E.Hopcroff, Jeffery D.Ullman, Introduction to Automata theory, Languages and Computation, Narosa Publishing House.
2. J.C.Martin, Introduction to languages and the Theory of Computation, Tata McGraw Hill Publishing Company Ltd.)

I - SATELLITE COMMUNICATION

3	2	0	4

UNIT I
OVERVIEW OF SATELLITE SYSTEMS, ORBITS AND LAUNCHING METHODS

Introduction – Frequency Allocations for Satellite Services – Intelsat – U.S.Domsats – Polar Orbiting Satellites – Problems – Kepler's First Law – Kepler's Second Law – Kepler's Third Law – Definitions of Terms for Earth-orbiting Satellites – Orbital Elements – Apogee and Perigee Heights – Orbital Perturbations – Effects of a Nonspherical Earth – Atmospheric Drag – Inclined Orbits – Calendars – Universal Time – Julian Dates – Sidereal Time – The Orbital Plane – The Geocentric-Equatorial Coordinate System – Earth Station Referred to the IJK Frame – The Topcentric-Horizon Co-ordinate System – The Sub-satellite Point – Predicting Satellite Position.

UNIT II
GEOSTATIONARY ORBIT & SPACE SEGMENT

Introduction – Antenna Look Angels – The Polar Mount Antenna – Limits of Visibility – Near Geostationary Orbits – Earth Eclipse of Satellite – Sun Transit Outage – Launching Orbits – Problems – Power Supply – Attitude Control – Spinning Satellite Stabilization – Momentum Wheel Stabilization – Station Keeping – Thermal Control – TT&C Subsystem – Transponders – Wideband Receiver – Input Demultiplexer – Power Amplifier – Antenna Subsystem – Morelos – Anik-E – Advanced Tiros-N Spacecraft

UNIT III
EARTH SEGMENT & SPACE LINK

Introduction – Receive-Only Home TV Systems – Outdoor Unit – Indoor Unit for Analog (FM) TV – Master Antenna TV System – Community Antenna TV System – Transmit-Receive Earth Stations – Problems – Equivalent Isotropic Radiated Power – Transmission Losses – Free-Space Transmission – Feeder Losses – Antenna Misalignment Losses – Fixed Atmospheric and Ionospheric Losses – Link Power Budget Equation – System Noise – Antenna Noise – Amplifier Noise Temperature – Amplifiers in Cascade – Noise Factor – Noise Temperature of Absorptive Networks – Overall System Noise Temperature – Carrier-to-Noise Ratio – Uplink – Saturation Flux Density – Input Back Off – The Earth Station HPA – Downlink – Output Back off – Satellite TWTA Output – Effects of Rain – Uplink rain-fade margin – Downlink rain-fade margin – Combined Uplink and Downlink C/N Ratio – Intermodulation Noise.

UNIT IV
SATELLITE ACCESS

Single Access – Preassigned FDMA, Demand-Assigned FDMA, SPADE System. Bandwidth-limited a Power-limited TWT amplifier operation, FDMA downlink analysis.
TDMA : Reference Burst; Preamble and Postamble, Carrier recovery, Network synchronization, unique word detection, Traffic Date, Frame Efficiency and Channel capacity, preassigned TDMA, Demand assigned TDMA, Speech Interpolation and Prediction, Downlink analysis for Digital transmission.
Companion of uplink Power requirements for FDMA & TDMA. On-board signal Processing for TDMA / FDMA operation, Satellite switched TDMA.

Code-Division Multiple Access – Direct-Sequence spread spectrum – code signal c(t) – autocorrelation function for c(t) – Acquisition and trackling – Spectrum spreading and dispreading – CDMA throughput – Problems – Network Layers – TCP Link – Satellite Links and TCP – Enhancing TCP Over Satellite Channels Using Standard Mechanisms (RFC-2488) – Requests for comments – Split TCP connections – Asymmetric Channels – Proposed Systems.

UNIT V

DIRECT BROADCAST SATELLITE SERVICES

Introduction – Orbital Spacings – Power Rating and Number of Transponders – Frequencies and Polarization – Transponder Capacity – Bit Rates for Digital Television – MPEG Compression Standards – Forward Error Correction – Home Receiver Outdoor Unit (ODU) – Home Receiver Indoor Unit (IDU) – Downlink Analysis – Uplink -Problems - Satellite Mobile Services – VSATs – Radarsat – Global Positioning Satellite System – Orbcomm.

TEXT BOOK

1. Dennis Roddy, Satellite Communications, McGraw-Hill Publication Third edition 2001

REFERENCES

1. Timothy Pratt – Charles Bostian & Jeremy Allmuti, Satellite Communications, John Willy & Sons (Asia) Pvt. Ltd. 2004

2. Wilbur L. Pritchars Henri G.Suyder Hond Robert A.Nelson, Satellite Communication Systems Engineering, Pearson Education Ltd., Second edition 2003.

3. M.Richharia : Satellite Communication Systems (Design Principles Macmillan Press Ltd. Second Edition 2003.

J - DIGITAL IMAGE PROCESSING

3   2   0   4

UNIT I DIGITAL IMAGE FUNDAMENTALS AND TRANSFORMS

Elements of visual perception – Image sampling and quantization Basic relationship between pixels – Basic geometric transformations-Introduction to Fourier Transform and DFT – Properties of 2D Fourier Transform – FFT – Separable Image Transforms -Walsh – Hadamard – Discrete Cosine Transform, Haar, Slant – Karhunen – Loeve transforms.

UNIT II IMAGE ENHANCEMENT TECHNIQUES:

Spatial Domain methods: Basic grey level transformation – Histogram equalization – Image subtraction – Image averaging –Spatial filtering: Smoothing, sharpening filters – Laplacian filters – Frequency domain filters : Smoothing – Sharpening filters – Homomorphic filtering.

UNIT III   IMAGE RESTORATION:

Model of Image Degradation/restoration process – Noise models – Inverse filtering -Least mean square filtering – Constrained least mean square filtering – Blind image restoration – Pseudo inverse – Singular value decomposition.

UNIT IVIMAGE COMPRESSION

Lossless compression: Variable length coding – LZW coding – Bit plane coding- predictive coding-DPCM.
Lossy Compression: Transform coding – Wavelet coding – Basics of Image compression standards: JPEG, MPEG,Basics of Vector quantization.

UNIT V IMAGE SEGMENTATION AND REPRESENTATION

Edge detection – Thresholding - Region Based segmentation – Boundary representation: chair codes-Polygonal approximation – Boundary segments – boundary descriptors: Simple descriptors-Fourier descriptors - Regional descriptors –Simple descriptors- Texture

TEXT BOOKS

1. Rafael C Gonzalez, Richard E Woods 2nd Edition, Digital Image Processing - Pearson Education 2003.

REFERENCES

1. William K Pratt, Digital Image Processing John Willey (2001)
2. Image Processing Analysis and Machine Vision – Millman Sonka, Vaclav hlavac, Roger Boyle, Broos/colic, Thompson Learniy (1999).
3. A.K. Jain, PHI, New Delhi (1995)-Fundamentals of Digital Image Processing.
4. Chanda Dutta Magundar – Digital Image Processing and Applications, Prentice Hall of India, 2000

K - THEORY OF COMPUTATION

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UNIT I
AUTOMATA

Introduction to formal proof – Additional forms of proof – Inductive proofs –Finite Automata (FA) – Deterministic Finite Automata (DFA)– Non-deterministic Finite Automata (NFA) – Finite Automata with Epsilon transitions.

UNIT II
REGULAR EXPRESSIONS AND LANGUAGES

Regular Expression – FA and Regular Expressions – Proving languages not to be regular – Closure properties of regular languages – Equivalence and minimization of Automata.

UNIT III
CONTEXT-FREE GRAMMAR AND LANGUAGES

Context-Free Grammar (CFG) – Parse Trees – Ambiguity in grammars and languages – Definition of the Pushdown automata – Languages of a Pushdown Automata – Equivalence of Pushdown automata and CFG, Deterministic Pushdown Automata.

UNIT IV
PROPERTIES OF CONTEXT-FREE LANGUAGES

Normal forms for CFG – Pumping Lemma for CFL - Closure Properties of CFL – Turing Machines – Programming Techniques for TM.

UNIT V
UNDECIDABILITY

A language that is not Recursively Enumerable (RE) – An undecidable problem that is RE – Undecidable problems about Turing Machine – Post's Correspondence Problem - The classes P and NP.

TEXT BOOK

1. J.E.Hopcroft, R.Motwani and J.D Ullman, "Introduction to Automata Theory, Languages and Computations", Second Edition, Pearson Education, 2003.

REFERENCES

1. H.R.Lewis and C.H.Papadimitriou, "Elements of The theory of Computation", Second Edition, Pearson Education/PHI, 2003
2. J.Martin, "Introduction to Languages and the Theory of Computation", Third Edition, TMH, 2003.
3. Micheal Sipser, "Introduction of the Theory and Computation", Thomson Brokecole, 1997.

L - ADVANCED JAVA PROGRAMMING

3   2   0   4

UNIT I
JAVA FUNDAMENTALS

Java I/O streaming – filter and pipe streams – Byte Code interpretation - reflection – Dynamic Reflexive Classes – Threading – Java Native Interfaces- Swing.

UNIT II
NETWORK PROGRAMMING IN JAVA

Sockets – secure sockets – custom sockets – UDP datagrams – multicast sockets – URL classes – Reading Data from the server – writing data – configuring the connection – Reading the header – telnet application – Java Messaging services

UNIT III
APPLICATIONS IN DISTRIBUTED ENVIRONMENT

Remote method Invocation – activation models – RMI custom sockets – Object Serialization – RMI – IIOP implementation – CORBA – IDL technology – Naming Services – CORBA programming Models - JAR file creation

UNIT IV
MULTI-TIER APPLICATION DEVELOPMENT

Server side programming – servlets – Java Server Pages - Applet to Applet communication – applet to Servlet communication - JDBC – Using BLOB and CLOB objects – storing Multimedia data into databases – Multimedia streaming applications – Java Media Framework.

UNIT V
ENTERPRISE APPLICATIONS

Server Side Component Architecture – Introduction to J2EE – Session Beans – Entity Beans – Persistent Entity Beans – Transactions.

TEXT BOOKS

1. Elliotte Rusty Harold, " Java Network Programming", O'Reilly publishers, 2000 (UNIT II)
2. Ed Roman, "Mastering Enterprise Java Beans", John Wiley & Sons Inc., 1999. (UNIT III and UNIT V)
3. Hortsmann & Cornell, "CORE JAVA 2 ADVANCED FEATURES, VOL II", Pearson Education, 2002. (UNIT I and UNIT IV)

REFERENCES

1. Web reference: http://java.sun.com.
2. Patrick Naughton, "COMPLETE REFERENCE: JAVA2", Tata McGraw-Hill, 2003.

M - GRID COMPUTING

UNIT I GRID COMPUTING

Introduction - Definition and Scope of grid computing

UNIT II GRID COMPUTING INITIALIVES

Grid Computing Organizations and their roles – Grid Computing analog – Grid Computing road map.

UNIT III GRID COMPUTING APPLICATIONS

Merging the Grid sources – Architecture with the Web Devices Architecture.

UNIT IV TECHNOLOGIES

OGSA – Sample use cases – OGSA platform components – OGSI – OGSA Basic Services.

UNIT V GRID COMPUTING TOOL KITS

Globus GT 3 Toolkit – Architecture, Programming model, High level services – OGSI .Net middleware Solutions.

TEXTBOOK

1. Joshy Joseph & Craig Fellenstein, "Grid Computing", Pearson/PHI PTR-2003.

REFERENCE BOOK

1. Ahmar Abbas, "Grid Computing: A Practical Guide to technology and Applications", Charles River media – 2003.

N - NEURAL NETWORKS

3	2	0	4

UNIT I

Introduction : Humans and Computers , the structure of the brain , Learning in machines , The differences.

Pattern Recognition : Introduction Pattern Recognition in perspective , Pattern recognition – a definition, Feature vectors and feature space , discriminant Functions , classifications Techniques , pattern recognition – a summary.

UNIT II

The Basic Neuron : Introduction , Modeling the single neuron , Learning in Simple neuron , The perception : a vectorial Perspective , The perception learning rule , Proof , Limitations Of the perceptions.

The Multi Layer Perception : Introduction , Altering the perception model , the new model , the new learning rule , The multi layer perception algorithm , The XOP problem reverted , Visualizing network behaviour , Multi layer perceptions   As classifiers , Generalization , Fault tolerance , Learning difficulties , Radial basis functions , applications.

UNIT III

Kohenen Self- Organizing Networks :   Introduction , The Kohenen Algorithm , Weight training , Neighborhood ,Reducing the neighborhood , Learning vector Quantisation, The Phonetic type writer.

UNIT IV

Hopfields Networks : The Hopfield model , The energy landscape , The Boltzman Machine , constraint satisfaction . ADAPTIVE RESONANCE MEMORY : Adaptive resonance theory, Architecture and operation , ART network , Clarification Conclusion , Summary of ART.

UNIT V

Associative Memory : Standard Computer memory , Implementing Associative memory , Implementation In RAM's, FAMS & N - tupling, Willshaw 's associative net , The ADAM system , Kaneva's sparse distributed memory , Bi-directional associative Memories.Hardware and software implementations , Optical Computing , Neural networks .

TEXT BOOK:

1. R.Beale & T.Jackson , Neural Computing , An Introduction , Adam Hilger , 1990.

REFERENCE BOOK :

1.Pao Y.H Adaptive Pattern Recognition and Neural Networks , Addison Wesley , 1989.

O - SOFTWARE AGENTS

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UNIT I
.AGENTS – OVERVIEW

Agent definition – agent programming paradigms – Agents Vs objects – aglets – mobile agents – agent frame works – agent reasoning

UNIT II
JAVA AGENTS

Processes – threads – daemons – components – Java Beans – ActiveX – Sockets, RPCs – distributed computing – aglets programming – Jini architecture – actors and agents – typed and proactive messages

UNIT III
MULTI AGENT SYSTEMS

Interaction between agents – reactive agents – cognitive agents – interaction protocols – agent coordination – agent negotiation – agent cooperation – agent organization – self –interested agents in electronic commerce applications

UNIT IV
INTELLIGENT SOFTWARE AGENTS

Interface Agents – Agent Communication Languages – Agent Knowledge Representation – Agent Adaptability – Belief Desire Intension – Mobile Agent Applications

UNIT V
AGENTS AND SECURITY

Agent Security Issues – Mobile Agents Security – Protecting Agents Malicious Hosts – Un trusted Agents – Black box Security – Authentication for Agents – Security issues for Aglets.

REFERENCES BOOKS:

1. Constructing intelligent agents with Java, Bigus & Bigus, Wiley.
2. Software Agents, Bradshaw, MIT Press, 2000
3. Artificial Intelligence: a modern approach, Russel & Novirg, Prentice Hall
4. Intelligent Software Agents, Richard Murch, Tony Johnson, Prentice Hall, 2000.

P - ELECTRONIC COMMERCE

3   2   0   4

UNIT I

Introduction – Electronic Commerce Framework – The Anatomy of E-Commerce Applications. The Network Infrastructure for E-Commerce, The Internet as a Network Infrastructure.

UNIT II

Electronic Payment Systems, Inter organizational Commerce and EDI, EDI Implementation, MIME and Value – added Networks.

UNIT III

Advertising and Marketing on the Internet, Computer Based Education and Training, Technological Components of Education on-Demand, Digital Copy rights and Electronic Commerce, Software Agent.

UNIT IV

The Corporate Digital Library – Dimensions of Internal Electronics Commerce Systems, Making a Business case for a document Library, Types of Digital documents, Issues behind document Infrastructure, Corporate data warehouses, Documents Active / Compound document architecture.

UNIT V

Multimedia and Digital Video – Broad band Telecommunications – Mobile and Wireless Computing Fundamentals.

TEXT BOOK

1. "Frontiers of Electronic Commerce", Kalakota & Whinston, Pearson Education, 2002.

REFERENCES

1. Kamalesh K. Bajaj, "E-Commerce: The Cutting Edge & Business", Tata McGraw-Hill, 2003.
2. Brenda Kennan, "Managing your E-Commerce Business", PHI, 2001.
3. "Electronic Commerce from Vision to Fulfillment", PHI, Elias M. Awad, Feb-2003.
4. "Electronic Commerce – Framework, Technology and Application", TMH, Bharat Bhaskar, 2003.
5. Effy Oz, " Foundations of E-Commerce", PHI, 2001.
6. Jim A Carter, "Developing E-Commerce Systems", PHI, 2001.

Q - OPTICAL COMMUNICATION

3   2   0   4

UNIT I
INTRODUCTION TO OPTICAL FIBERS

Evolution of fiber optic system- Element of an Optical Fiber Transmission link- Ray Optics-Optical Fiber Modes and Configurations –Mode theory of Circular Wave guides- Overview of Modes-Key Modal concepts- Linearly Polarized Modes –Single Mode Fibers-Graded Index fiber structure.

UNIT II
SIGNAL DEGRADATION OPTICAL FIBERS

Attenuation – Absorption losses, Scattering losses, Bending Losses, Core and Cladding losses, Signal Distortion in Optical Wave guides-Information Capacity determination –Group Delay-Material Dispersion, Wave guide Dispersion, Signal distortion in SM fibers-Polarization Mode dispersion, Intermodal dispersion, Pulse Broadening in GI fibers-Mode Coupling –Design Optimization of SM fibers-RI profile and cut-off wavelength.

UNIT III
FIBER OPTICAL SOURCES AND COUPLING

Direct and indirect Band gap materials-LED structures –Light source materials –Quantum efficiency and LED power, Modulation of a LED, lasers Diodes-Modes and Threshold condition –Rate equations –External Quantum efficiency –Resonant frequencies –Laser Diodes, Temperature effects, Introduction to Quantum laser, Fiber amplifiers- Power Launching and coupling, Lencing schemes, Fibre –to- Fibre joints, Fibre splicing.

UNIT IV
FIBER OPTICAL RECEIVERS

PIN and APD diodes –Photo detector noise, SNR, Detector Response time, Avalanche Multiplication Noise –Comparison of Photo detectors –Fundamental Receiver Operation – preamplifiers, Error Sources –Receiver Configuration –Probability of Error – Quantum Limit.

UNIT V
DIGITAL TRANSMISSION SYSTEM

Point-to-Point links System considerations –Link Power budget –Rise - time budget –Noise Effects on System Performance-Operational Principles of WDM, Solitons-Erbium-doped Amplifiers. Basic on concepts of SONET/SDH Network. .

TEXT BOOK

1. Gerd Keiser, "Optical Fiber Communication" McGraw–Hill International, Singapore, 3rd ed., 2000

REFERENCES

1. J.Senior, "Optical Communication, Principles and Practice", Prentice Hall of India, 1994.
2. J.Gower, "Optical Communication System", Prentice Hall of India, 2001.

R - APPLIED GRAPH THEORY

3 2 0 4

UNIT I
(PATHS ANC CYCLES)

Introduction to graphs - Basic definitions - Matrix representations - Complete graphs - Regular graphs - 1Connectivity - Cutsets - Cut vertices - Eulerian graphs - Hamiltonian graphs - Shortest path algorithm - Chineese postman problem.

UNIT II
(TREES AND PLANAR GRAPHS)

Trees and forests - Fundamental cutsets - Counting trees : Cayley's theorem - Minimum connector problem - Searching trees : Depth first search and breadth first search (concept only) - Planar graphs - Kuratowski's graphs - Euler's formula - Dual graphs : Abstract dual.

UNIT III
(COLORING)

Coloring vertices - Chromatics number - Six color and five color theorem - Brooks' theorem - Coloring maps - Coloring edges - Chromatic index - Chromatic polynomials.

UNIT IV
(DIGRAPHS)

Directed graphs - Strongly connected graphs - Critical path problem - Eulerian digraphs and tournaments - Hamiltonian digraphs - Markov chain - Transition matrix.

UNIT V
(MATCHING PROBLEMS)

Hall's marriage theorem - Edge disjoint and vertex disjoint paths - Menger's theorem - Implication of Menger's theorem - Network flows - Zero and non zero flows - Maximum flows - Max flow min cut theorem.

REMARKS
"THE PAPER IS NOT THEORY ORIENTED AND THE CONTENTS OF THE PRESCRIBED TEXT BOOK ARE TO BE STRICTLY FOLLOWED""EACH UNIT IS TO BE COVERED IN 12 PERIODS EACH OF 50 MINUTES DURATION"

PRESCRIBED TEXT BOOK

Robin J. Wilson, Introduction to Graph Theory, Longman Ltd., 2000.

    Unit I   : Chapters 1, 2, 3 (Except section 4)
    Unit II : Chapters 4, 5 (Except section 14, 16)
    Unit III : Chapter 6 (All Sections)
    Unit IV : Chapter 7 (All Sections)
    Unit V   : Chapter 8 (Except sections 26, 27)

REFERENCES

1. Narsingh Deo, Graph Theory (With Applications to Engineering and Computer Science), Prentice Hall of India, 2000.
2. Douglas B. West, Introduction to Graph Theory, Prentice Hall of India, 1999.
3. Harary, Graph Theory, Narosa Publishing House, New Delhi, 1998.
4. K.R.Parthasarathy, Basic Graph Theory, Tata McGraw Hill Publishing Company, 1994.

S - VLSI

3	2	0	4

UNIT – I

Introduction to CMOS and MOS Transistor theory: Introduction to IC Technologies and the MOORE's Law. MOS as a switch, CMOS logic CIRCUITS: The CMOS Inverter, Combinational logic implementation, Memory-latches and registers. The nMOS Transistor (enhancement) – Structure and operating regions. pMOS transistor (Enhancement)-structure only. Threshold voltage, Body effect. MOS device design equations (First order effects). The CMOS inverter characteristics, Noise margin, β_n/β_p ratio. Introduction to the CMOS transmission gate. BiCMOS Technology –BiCMOS Inverter. Merits of CMOS technology

UNIT – II

CMOS processing technology and Layouts: Silicon Semiconductor technology, wafer preparation and fabrication processes: Oxidation, Epitaxy, Ion Implantation, deposition and diffusion. Silicon gate nMOS process. CMOS Fabrication methods: n-well process, SOI Process, and Twin-Tub process. Latchup in CMOS circuits.
Layout design rules – Need for design rules. λ based rules. CMOS Layout diagrams – Basic Inverter, NAND, NOR, and Transmission gates. Scaling CMOS circuits

UNIT – III

MOS Circuit and Logic design process: MOS device capacitances – model. Switching characteristics of CMOS Inverter -Rise time, Fall time, delay time. Distributed RC effects. Transistor Gate Sizing basics. Stage ratio.

UNIT – IV

ASIC Design Process, VerilogHDL Programming: Circuit and System representations – Behavioral, Structural and Physical, and the Y diagram. ASIC Design Flow –Front End and BackEnd. Basic programming concepts in Verilog HDL:. Behavioral, RTL and Structural modeling in Verilog. Solving Combinational and sequential problems using Verilog HDL.

UNIT –V

VLSI CAD Tools – An overview of Contemporary CAD Tools used for VLSI Design
Testing of VLSI circuits – Fault models, Gate level testing, Scan-based Testing, and Test Pattern generation.

<u>TEXT BOOK:</u>

1. "Principles of CMOS VLSI Design "- Neil Weste and Kamran Eshraghian.

<u>REFERENCEBOOKS:</u>
1. VLSI Design Priciples- John P. Uyemura.
2. Randall L .Geiger and P.E. Allen, "VLSI design techniques for analog and digital circuits"
3. Peter J. Ashenden,"The designers guide to VHDL"
4. Douglas A. Pucknell and Kamran Eshraghian "Basic VLSI Design systems and circuits".

T - INFORMATION SYSTEMS DESIGN

3   2   0   4

UNIT I
MANAGING THE DIGITAL FIRM

Why information systems – contemporary approaches to information systems – new role of information systems- major types of systems in organizations – systems from a functional perspective – enterprise applications – organizations and information systems – managers decision making and information systems – information systems and business strategy.

UNIT II
DESIGNING INFORMATION SYSTEMS

Systems as planned organizational change – business process re-engineering and process improvement – overview of systems development – alternate system – Building approaches – Understanding the business value of Information Systems - The importance of change management in information system success and failure – Managing Implementation.

UNIT III
DEVELOPMENT AND MAINTENANCE OF INFORMATION SYSTEMS

Systems analysis and design – System development life cycle – Limitation – End User Development – Managing End Users – off-the shelf software packages – Outsourcing – Comparison of different methodologies.

UNIT IV
KNOWLEDGE MANAGEMENT, ETHICS AND SECURITY

Knowledge Management in the organization – Information and Knowledge base systems – Decision - support systems – Understanding ethical and Social issues packed to systems – Ethics in an Information society – The moral dimensions of Information Systems – System vulnerability and abuse – Creating a control environment – Ensuring System Quality.

UNIT V INFORMATION ARCHITECTURE

Defining Information Architecture – why Information Architecture matters – Practicing Information Architecture in the Real world – Information Ecologies – User needs and Behavior – The anatomy of Information Architecture – Organizing Systems – Search Systems.

TEXT BOOKS

1. Lauaon Kenneth & Landon Jane, "Management Information Systems: Managing the Digital firm", Eighth edition, PHI, 2004.[Unit – 1, 2, 4]
2. Uma G. Gupta, "Management Information Systems – A Management Prespective", Galgotia publications Pvt., Ltd., 1998. [Unit – 3].
3. Louis Rosenfel and Peter Morville, "Information Architecture for the World wide Web", O'Reilly Associates, 2002. [Unit – 5].

REFERENCES

1. Steven Alter, "Information Systems – A Management Perspective", Pearson Education, 2001.
2. Uma Gupta, "Information Systems – Success in 21st Century", Prentice Hall of India, 2000.
3. Robert G. Murdick, Joel E. Ross and James R. Claggett, "Information Systems for Modern Management", PHI, 1994.

U - TOTAL QUALITY MANAGEMENT

UNIT I – I
INTRODUCTION

Definition of Quality, Dimensions of Quality, Quality Planning, Quality costs - Analysis Techniques for Quality Costs, Basic concepts of Total Quality Management, Historical Review, Principles of TQM, Leadership – Concepts, Role of Senior Management, Quality Council, Quality Statements, Strategic Planning, Deming Philosophy, Barriers to TQM Implementation.

UNIT – II
TQM PRINCIPLES

Customer satisfaction – Customer Perception of Quality, Customer Complaints, Service Quality, Customer Retention, Employee Involvement – Motivation, Empowerment, Teams, Recognition and Reward, Performance Appraisal, Benefits, Continuous Process Improvement – Juran Trilogy, PDSA Cycle, 5S, Kaizen, Supplier Partnership – Partnering, sourcing, Supplier Selection, Supplier Rating, Relationship Development, Performance Measures – Basic Concepts, Strategy, Performance Measure.

UNIT – III
STATISTICAL PROCESS CONTROL (SPC)

The seven tools of quality, Statistical Fundamentals – Measures of central Tendency and Dispersion, Population and Sample, Normal Curve, Control Charts for variables and attributes, Process capability, Concept of six sigma, New seven Management tools.

UNIT – IV
TQM TOOLS
Benchmarking – Reasons to Benchmark, Benchmarking Process, Quality Function Deployment (QFD) – House of Quality, QFD Process, Benefits, Taguchi Quality Loss Function, Total Productive Maintenance (TPM) – Concept, Improvement Needs, FMEA – Stages of FMEA.

UNIT – V
QUALITY SYSTEMS

Need for ISO 9000 and Other Quality Systems, ISO 9000:2000 Quality System – Elements, Implementation of Quality System, Documentation, Quality Auditing, TS 16949, ISO 14000 – Concept, Requirements and Benefits.

TEXT BOOK

1. Dale H.Besterfiled, et al., Total Quality Management, Pearson Education, Inc. 2003. (Indian reprint 2004). ISBN 81-297-0260-6.

REFERENCES
1. James R.Evans & William M.Lidsay, The Management and Control of Quality, (5th Edition), South-Western (Thomson Learning), 2002 (ISBN 0-324-06680-5).
2. Feigenbaum.A.V. "Total Quality Management, McGraw-Hill, 1991.
3. Oakland.J.S. "Total Quality Management Butterworth – Hcinemann Ltd., Oxford. 1989.
4. Narayana V. and Sreenivasan, N.S. Quality Management – Concepts and Tasks, New Age International 1996.
5. Zeiri. "Total Quality Management for Engineers Wood Head Publishers, 1991.

V - PROGRAMMING C# 3.0

UNIT I

Evolution of C# - .NET Platform – Using Visual Studio 2008
C# Language Fundamentals -Types-Variables and Constants –Statements-Operators-Preprocessor Directives;Defining Classes-Creating Objects-Using Static Members-Destroying Objects-Passing ParametersOverloading Methods and Constructors-Encapsulating Data with Properties-readonly Fields; Inheritance and Polymorphism -Abstract Classes- Object -Nesting Classes ; Operator Overloading - operator Keyword -Supporting Other .NET Languages -Creating Useful Operators-Logical Pairs-The Equality Operator-Conversion Operators-Putting Operators to Work ; Defining Structs -Creating Structs ;
Defining and Implementing an Interface-Overriding Interface Implementations-Explicit Interface Implementation

UNIT II

Arrays -The foreach Statement -Indexers -Collection Interfaces -Constraints -List<T> -Queues -Stacks -Dictionaries -Strings -Regular Expressions -Exceptions -Throwing and Catching Exceptions - Exception Objects - Events -Events and Delegates -Anonymous Methods

UNIT III

LINQ and C# -Anonymous Types-Implicitly Typed Local Variables-Extension Methods -Lambda Expressions in LINQ ;XML Basics -Creating XML Documents -Searching in XML with XPath - Searching Using XPathNavigator -XML Serialization ;
LINQ to SQL Fundamentals-Using Visual Studio LINQ to SQL Designer-Retrieving Data -Updating Data Using LINQ to SQL -Deleting Relational Data -LINQ to XML;
Introduction to ADO.NET Object Model

UNIT IV

Programming ASP.NET Applications -Web Forms Fundamentals -Creating a Web Form –Server Controls - Data Binding – Event Handling;Programming WPF Applications –Introduction to WPF - Building the Application – Grids and Stack Panel – Adding Data – Using Data in XAML- Event Handling;Programming Windows Forms Applications – Form creation- Event Handling- Using Controls

Unit 5
Attributes -Reflection -Threads -Synchronization -Race Conditions and Deadlocks - Streams-Files and Directories -Reading and Writing Data -Asynchronous I/O -Network I/O -Web Streams -Serialization -Isolated Storage;Programming .NET and COM -Importing ActiveX Controls - P/Invoke -Pointers ;

TEXTBOOK:

1. Programming C# 3.0-Fifth Edition by Jesse Liberty and Donald Xie – O'Reilly Publication (2007)

REFERENCE BOOKS

1. Herbert Schildt, "The Complete Reference –C#", TMH, 2004.
2. Robinson et al, "Professional C#", 2nd Edition, Wrox Press, 2002.
3. Andrew Troelsen, "C# and the .NET Platform", A! Press, 2003.
4. S. Thamarai Selvi and R. Murugesan, "A Textbook on C#", Pearson Education, 2003.

W - SOFTWARE TESTING

UNIT I

Introduction: The purpose of testing, a model for testing. The taxonomy of Bugs: The importance of bugs, How bugs affect us - Consequences, flexibility severity rather than Absolutes.

A taxonomy for Bugs: Requirements, Features and functionality Bugs, Structural Bugs, data Bugs, Coding Bugs, Interface, Integration and System Bugs, Test and Test Design Bugs, Testing and Design Style.

UNIT II

Flow graphs and Path Testing: Path-testing Basics, Predicates, path predicates and achievable paths, Path sensitizing, path Instrumentation, Implement and Application of Path-testing.

Transactional-Flow Testing: Generalization, Transaction flows, Transaction-Flow testing Techniques, Implementation comments.

Data- flow Testing: Data-flow testing basics , Data-flow testing strategies , Applications, tools, Effectiveness.

UNIT III

Domain Testing :Domains and paths, Nice Domains and ugly Domains, Domain testing, Domains and interface testing, Domains and Testability.

Metrics and Complexity: Details about metrics, linguistic metrics, Structural metrics, hybrid metrics, Metrics Implementation.

Paths, Path Products and regular Expressions: Path products and path expressions, A Reduction Procedure, Application, Regular Expressions and Flow anamoly detection.

UNIT IV

Syntax Testing: Necessity and Methodology of syntax testing , A Grammar for Formats ,Test case generation, Implementation and Application.

Login -based Testing: Decision tables, path expressions, KV charts, Specifications.

States, State Graphs and Transition Testing: State graphs, Good and bad State Graphs, State testing.

UNIT V

Graphs matrices and Applications: The matrix of a graph, relations, The powers of a matrix , Node-Reduction Algorithm, Building Tools.

Implementation: Strategies for Programmers, Strategies for independent testers, Test as software products, Tools.

TEXT BOOK

1.   BORIES BEIZER, Software Testing Techniques (Second Edition), Van Nostrand Reinhold, USA.

REFERENCE BOOKS

1.   MARC ROPER, Software Testing, McGraw Hill.
2.   GLENFORD J. MYERS, The art of Software Testing , John Wiley & Sons.

X- TELECOMMUNICATION SYSTEMS

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UNIT I

METHODS OF COMMUNICATION

Transmission lines – Types and Characteristics, Antenna Fundamentals – Different types of antennas & their Characteristics, Radio Frequency wave propagation- Microwave –Principles, Devices (Reflex Klystron, Magnetron, TWT)-(Principles Only) Radar - Pulsed Radar - CW Radar (Principles and Block Diagram Only).

UNIT II

INTRODUCTION TO SATELLITE COMMUNICATIONS

Satellite orbits- Satellite communication systems –Earth stations- Applications: Surveillance, Navigation, Mobile Communication, TV Broadcast, Satellite Radio, Satellite Telephone-The Internet.

UNIT III

INTRODUCTION TO FIBER OPTIC COMMUNICATION

Light wave communication systems – Fiber structure and function types of Fiber – Optical Transmitter & Receiver –Fiber optic Data communication systems

UNIT IV

TELEPHONE SYSTEM AND ITS APPLICATION

Telephones –Telephone system- Facsimile- Cellular telephone system-Paging system –Integrated services Digital Networks (ISDN)

UNIT V

CELLULAR RADIO

Citizen's band Radio, Cordless Telephone, Improved Mobile Telephone service (IMTS), Introduction to Advanced Mobile Phone Service (AMPS), GSM – RF channels and time slots – Voice transmission – Frequency Hopping - Subscriber ID module – GSM Privacy and Security – IS-95 CDMA PCS – Channels – Forward Channel – Reverse Channel – Voice Coding – Power Control – Hand-off and CDMA Security.

TEXT BOOKS

1. Louis.E.Frenzel, Communication Electronics – Principles and Application", 3rd Editions, Tata McGraw-Hill, 2002 (Units I to IV)
2. Roy Blake, "Wireless Communication Technology", Thomson Delmar Learning, Second Reprint 2002. (UNIT V Chapters: 10, 11)

REFERENCES

1. Wayne Tomasi,"Electronic Communication systems" 4th Edition, Pearson Education, 2001.
2. Marin Cole, "Introduction to Telecommunications –Voice, Data and Internet", Pearson Education, 2001.