Total Contact Hours = 29 **Total Marks = 800** **Total Credits = 24**

SEMESTER 1st		Contact Hrs.			Marks			Credits
Subject Code	**Subject Name**	**L**	**T**	**P**	**Int.**	**Ext.**	**Total**	
BITE1-101	Trends in Information Technology	3	1	0	40	60	100	4
BITE1-102	Developing Programming Logic and Techniques	3	1	0	40	60	100	4
BHUM0-101	Communicative Skills-I	3	0	0	40	60	100	3
BMAT0-105	Mathematics – I	3	1	0	40	60	100	4
BHUM0-103	Human Values and Professional Ethics	3	1	0	40	60	100	4
BITE1-103	Information Technology Lab	0	0	4	60	40	100	2
BITE1-104	Programming Logic Lab	0	0	4	60	40	100	2
BHUM0-102	Communication Skills Lab-I	0	0	2	60	40	100	1
Total	**Theory = 5 Labs = 3**	**15**	**4**	**10**	**380**	**420**	**800**	**24**

Total Contact Hours = 30 **Total Marks = 800** **Total Credits = 25**

SEMESTER 2nd		Contact Hrs.			Marks			Credits
Subject Code	**Subject Name**	**L**	**T**	**P**	**Int.**	**Ext.**	**Total**	
BHUM0-213	Communication Skill – II	3	1	0	40	60	100	4
BMAT0-206	Mathematics – II	3	1	0	40	60	100	4
BITE1-205	Object Oriented Programming	3	1	0	40	60	100	4
BITE1-206	Fundamental of Digital Electronics	3	1	0	40	60	100	4
BESE0-101	Environmental Science	3	1	0	40	60	100	4
BITE1-207	Object Oriented Programming Lab	0	0	4	60	40	100	2
BITE1-208	Digital Electronics Lab.	0	0	4	60	40	100	2
BHUM0-214	Communication Skill Lab.-II	0	0	2	60	40	100	1
Total	**Theory = 5 Lab = 3**	**15**	**5**	**10**	**380**	**420**	**800**	**25**

Total Contact Hours = 26 Total Marks = 800 Total Credits = 24

SEMESTER 3rd		Contact Hrs.			Marks			Credits
Subject Code	**Subject Name**	**L**	**T**	**P**	**Int.**	**Ext.**	**Total**	
BITE1-309	Data structure	3	1	0	40	60	100	4
BITE1-310	Computer system architecture	3	1	0	40	60	100	4
BITE1-311	Operating system	3	1	0	40	60	100	4
BITE1-312	System Programming	3	1	0	40	60	100	4
BITE1-313	Data structure Lab.	0	0	2	60	40	100	1
BITE1-314	Operating system Lab.	0	0	2	60	40	100	1
Departmental Elective – I (Select any one)		3	0	0	40	60	100	3
BITE1-356	Management information systems							
BITE1-357	E-Commerce							
BITE1-358	Multimedia and Applications							
Open Elective-1		3	0	0	40	60	100	3
Total		**18**	**4**	**4**	**360**	**440**	**800**	**24**

Total Contact Hours = 26 Total Marks = 800 Total Credits = 24

SEMESTER 4th		Contact Hrs.			Marks			Credits
Subject Code	**Subject Name**	**L**	**T**	**P**	**Int.**	**Ext.**	**Total**	
BITE1-415	Computer Networks	3	1	0	40	60	100	4
BITE1-416	Embedded Systems	3	1	0	40	60	100	4
BITE1-417	Data Base Management Systems	3	1	0	40	60	100	4
BITE1-418	System Analysis & Design	3	1	0	40	60	100	4
BITE1-419	Computer Networks lab	0	0	2	60	40	100	1
BITE1-420	Database management system lab	0	0	2	60	40	100	1
Departmental Elective – II (Select any one)		3	0	0	40	60	100	3
BITE1-459	Design & Analysis of Algorithms							
BITE1-460	Computer Peripherals and Interfaces							
BITE1-461	Enterprise Resource Planning							
Open Elective-II		3	0	0	40	60	100	3
Total		**18**	**4**	**4**	**360**	**440**	**800**	**24**

Total Contact Hours = 23 Total Marks = 600 Total Credits = 19

SEMESTER 5th		Contact Hrs.			Marks			Credits
Subject Code	**Subject Name**	**L**	**T**	**P**	**Int.**	**Ext.**	**Total**	
BITE1-521	Programming in Java	3	1	0	40	60	100	4
BITE1-522	Web Technologies	3	1	0	40	60	100	4
BITE1-523	Software Engineering	3	1	0	40	60	100	4
Departmental Elective – III (Select any one)		3	0	0	40	60	100	3
BITE1-562	Artificial Intelligence							
BITE1-563	Expert Systems							
BITE1-564	Data Warehousing & Mining							
BITE1-524	Programming in Java Lab.	0	0	2	60	40	100	1
BITE1-525	Minor Project	0	0	6	60	40	100	3
Total		**12**	**3**	**8**	**280**	**320**	**600**	**19**

Total Contact Hours = 24 Total Marks = 600 Total Credits = 19

SEMESTER 6th		Contact Hrs.			Marks			Credits
Subject Code	**Subject Name**	**L**	**T**	**P**	**Int.**	**Ext.**	**Total**	
BITE1-626	Mobile Application Development	3	1	0	40	60	100	4
BITE1-627	Linux Administration	3	1	0	40	60	100	4
Departmental Elective – IV (Select any one)		3	0	0	40	60	100	3
BITE1-665	Cloud Computing							
BITE1-666	Network Security							
BITE1-667	Software Testing and Quality Assurance							
Departmental Elective – V (Select any one)		3	0	0	40	60	100	3
BITE1-668	Modelling and Simulation							
BITE1-669	Cyber Laws and IPR							
BITE1-670	Software Project Management							
BITE1-628	Major Project	0	0	8	60	40	100	4
BITE1-629	Mobile Application Development Lab.	0	0	2	60	40	100	1
Total		**12**	**2**	**10**	**280**	**320**	**600**	**19**

Semester	Marks	Credits
1st	800	24
2nd	800	25
3rd	800	24
4th	800	24
5TH	600	19
6TH	600	19
Total	**3200**	**135**

TRENDS IN INFORMATION TECHNOLOGY

Subject Code – BITE1-101 **L T P C** **Duration – 45 Hrs.**
3 1 0 4

UNIT–I (12 Hrs.)

Introduction to Computer: Computer System Characteristics, Hardware - CPU, Memory, Input, Output & Storage Devices, Organization of Secondary Storage Media, Software - System & Application, Types of processing Batch and On-line

UNIT-II (10 Hrs.)

Operating System Concepts: Role of an Operating System, Types of operating systems, Booting Procedure and Its Types, Fundamentals and Typical Instructions of Windows & Non-Windows based Operating Systems.

UNIT-III (12 Hrs.)

Computer Software: What is Software? Relationship between Hardware and Software, Logical System Architecture showing relationship between hardware, Types of Software: System Software, Application Software, Firmware, Functions of System Software, Type of **System Software:** Operating Systems, Language Translators, Utility Programs, Communications Software. Application Software, Commonly Used Application Software: Word Processing, Spreadsheet, Database, Graphics Personal Assistance, Education, Entertainment Software. Open Source Terminologies: Open Source Software, Freeware, Shareware, Proprietary Software, FLOSS, GNU, FSF, OSI.

UNIT-IV (11 Hrs.)

Advanced Trends in IT Wireless: Mobile Internet, GPS, 3G, 4G, Wi-Fi, Bluetooth, Social Networking, Cloud Technology, Virtual LAN Technology, Firewall, M-Commerce, Nanotechnology, Virtual Reality, BPO and KPO, Social and Ethical Issue YouTube, FaceBook, Linkedin, Orkut.

Recommended Books

1. Peter Nortorn's, 'Introduction to Computer', Tata McGraw Hill, **2004.**
2. R.K. Taxali, 'Introduction to Software Package', Galgotia Publications.
3. P.K. Sinha, 'Introduction to Computer'.

DEVELOPING PROGRAMMING LOGIC AND TECHNIQUES

Subject Code – BITE1-102 **L T P C** **Duration – 45 Hrs.**
3 1 0 4

UNIT–I (12 Hrs.)

Language Evolution Machine Language, Assembly Language, High Level Language. Translators: Compiler, Interpreter and Assembler. The Compilation Process, Linker, Loader, Study of HLL, Characteristics of Good Language, Generation of Languages, Study of Programming Languages (Function Oriented, Object Oriented, Event-Based).

UNIT-II (11 Hrs.)

Programming Construction Tools Problem Analysis, Process Analysis, Conceptual Development of Solution. Development Tools: Algorithm: Types of Algorithm, Algorithm of Analysis, Advantage and Disadvantage of Algorithm, Complexity of Algorithm, Big-O Notation Flowcharts: Types of Flowcharts, Advantage and Disadvantage of Flowchart. Pseudo Code: Definition and Its Characteristics.

UNIT-III (12 Hrs.)

Control Statements Basics of Programming Language: Usage of Character Set, Meaning

of Keywords and Identifiers, Role of Data Types, Constants and Variables. Importance of Casting, Different Types of Operators and their Precedence, Expressions, Conditional Statements (One-Way, Two-Way and Multi-Way Conditional), Looping Statements (For, While, do-while), Usage of Exit, Continue, Break and Goto Statement.

UNIT–IV (10 Hrs.)

Arrays Arrays: Arrays, one dimensional array, Various Operation on Array (Inserting of Element, Deleting of Element, Rotating List, Sorting, Searching, Merging Etc.) and Two dimensional arrays (Matrix Addition, Transpose of Matrix, Matrix Multiplication), Modular programming and its features.

Recommended Books

1. Behrouz Forouzan, 'Basic of Computer Science', Cengage Leaning.
2. Horowitz, Sahani, 'Fundamental of Computer Algorithm', Orient Longman.
3. Maureen Sprankle, 'Problem Solving Programming Concepts', 7th Edn., Pearson, **2009.**

MATHEMATICS-I

Subject Code: BMAT0-105 **L T P C** **Duration: 45 Hrs.**
3 1 0 4

UNIT-I (11 Hrs.)

Set Theory: Sets, Type of sets, Set operations, Principle of Inclusion-Exclusion, Cartesian product of sets, Partitions.

Logic: Propositions, Implications, Precedence of logical operators, Truth table, Arguments and validity of arguments, equivalence and implication laws of logic, Principle of Mathematical induction.

UNIT-II (11 Hrs.)

Relations: Relations and diagraph, n-ary relations and their applications, properties of relations, representing relations, closure of relation, equivalence relation, operation on relations, partial ordering.

Functions: Functions, One-to-one Functions, Onto Functions, Inverse and Composition of Functions, Floor Function, Ceiling Function.

UNIT-III (11 Hrs.)

Matrix Algebra

Matrices, types of matrices, operations on matrices, determinants, inverse of a matrix, Elementary transformations, Rank of a matrix, solution of simultaneous linear equations using Crammer's rule and matrix inversion method. Consistency of linear equations by Rank Method.

UNIT-IV (12 Hrs.)

Graph Theory.

Graphs: Introduction to Graph, Graph terminology, Representing graphs and Graph Isomorphism, Connectivity, Euler Paths and Circuits, Hamiltonian paths and circuits, Shortest Path Problems, Planar Graphs.

Trees: Trees, labelled trees, Tree Traversal, Undirected trees, Spanning Trees, Minimum spanning trees.

Recommended Books

1. Richard Johnsonbaugh, 'Discrete Mathematics', 5th Edn., Pearson Education, Asia.
2. M.N.S. Swami. & E. Thisiraman, 'Graphics Networks and Algorithms', 2nd Edn., John Wiley and Sons.
3. SeymonLipschutz& Max Lans Lipson, 'Discrete Mathematics', Tata McGraw Hill.

COMMUNICATION SKILLS-I

Subject Code: BHUM0-101 **L T P C** **Duration: 45 Hrs.**
3 0 0 3

Course Objectives

1. To expose the students to effective communication strategies and different modes of communication.
2. To enable the students to analyze his/her communication Behaviour and that of others.
3. To enable a student to apply effective communication skills professionally and socially.

UNIT-I (12 Hrs.)

Communication: Meaning, its types, Significance, Process, Channels, Barriers to Communication, Making Communication Effective, Role in Society.

Business Correspondence: Elements of Business Writing, Business Letters: Components and Kinds, Memorandum, Purchase Order, Quotation and Tenders, Job Application Letters, Resume Writing etc.

UNIT-II (10 Hrs.)

Discussion Meeting and Telephonic Skills: Group Discussion, Conducting a Meeting, Telephone Etiquettes, Oral Presentation: Role of Body Language and Audio Visual Aids.

Grammar: Transformation of Sentences, Words used as Different Parts of Speech One Word Substitution, Abbreviations, Technical Terms etc.

UNIT-III (11 Hrs.)

Reading Skills: Process of reading, Reading Purposes, Models, Strategies, Methodologies, Reading Activities.

Writing Skills: Elements of Effective Writing, Writing Style, Technical Writing: Report Writing.

UNIT-IV (12 Hrs.)

Listening Skills: The process of Listening, Barriers to Listening, Effective Listening Skills and Feedback Skills.

Speaking Skills: Speech Mechanism, Organs of Speech, Production and Classification of Speech Sound, Phonetic Transcription, Skills of Effective Speaking, Components of Effective Talk.

Course Outcomes

The students after undertaking this course will be able to:

1. Understand and appreciate the need of communication training.
2. Use different strategies of effective communication and select the most appropriate mode of communication for a given situation.
3. Speak effectively and assertively
4. Correspond effectively through different modes of written communication.
5. Present himself/herself professionally through effective resumes and interviews.

Recommended Books

1. M.V. Rodriques, 'Effective Business Communication', Concept Publishing Company New Delhi, **1992, reprint 2000.**
2. Adhikari Sethi, 'Business Communication', McGraw Hill.
3. Indrajit Bhattacharya, 'An Approach to Communication Skills', Dhanpat Rai Co., Pvt. Ltd., New Delhi.
4. Chrissie Wright, 'Handbook of Practical Communication Skills', Jaico Publishing House, Mumbai.
5. L. Gartside, 'Modern Business Correspondence', Pitman Publishing, London.

6. Rizvi M. Ashraf, 'Effective Technical Communication', McGraw Hill.

HUMAN VALUES & PROFESSIONAL ETHICS

Subject Code: BHUM0-103 **L T P C** **Duration: 24 Hrs.**
2 0 0 2

Course Objectives and Course Outcomes

To help the students discriminate between what is valuable and what is superficial in the life. To help the students develop the critical ability to distinguish between essence and form in life - this ability is to be developed not for a narrow area or field of study, but for everyday situations in life, covering the widest possible canvas. To help the students develop sensitivity and awareness; leading to commitment and courage to act on their own belief. It is not sufficient to develop the discrimination ability; it is important to act on such discrimination in a given situation. Knowingly or unknowingly, our education system has focused on the skill aspects (Course and doing) - it concentrates on providing to its students the skills to do things. In other words, it concentrates on providing "How to do" things. The aspects of understanding "What to do" or "Why something should be done" is assumed. No significant cogent material on understanding is included as a part of the curriculum. A result of this is the production of graduates who tend to join into a blind race for wealth, position and jobs. Often it leads to misuse of the skills; and confusion and wealth that breeds chaos in family, problems in society, and imbalance in nature. This course is an effort to fulfil our responsibility to provide our students this significant input about understanding. This course encourages students to discover what they consider valuable. Accordingly, they should be able to discriminate between valuable and the superficial in real situations in their life. It has been experimented at IIITH, IITK and UPTU on a large scale with significant results.

UNIT-I (6 Hrs.)

Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

Understanding the need, basic guidelines, content and process for Value Education Self-Exploration-what is it? - its content and process; "Natural Acceptance" and Experiential Validation- as the mechanism for self-exploration, Continuous Happiness and Prosperity- A look at basic Human Aspirations Right understanding, Relationship and Physical Facilities- the basic requirements for fulfilment of aspirations of every human being with their correct priority, Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario Method to fulfil the above human aspirations: understanding and living in harmonyat various levels

UNIT-II (8 Hrs.)

Understanding Harmony in the Human Being - Harmony in Myself!

Understanding human being as a co-existence of the sentient "I" and the material "Body"
Understanding the needs of Self ("I") and "Body" - *Sukh*and *Suvidha*
Understanding the Body as an instrument of "I" (I being the doer, seer and enjoyer)
Understanding the characteristics and activities of "I" and harmony in "I"
Understanding the harmony of I with the Body: *Sanyam*and *Swasthya*; correct appraisal of Physical needs, meaning of Prosperity in detail, Programs to ensure *Sanyam*and *Swasthya*

Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

Understanding harmony in the Family- the basic unit of human interaction; Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*; Trust (*Vishwas)* and Respect (*Samman)* as the foundational values of relationship; Understanding the meaning of *Vishwas*; Difference between intention and

competence Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship

UNIT-III (6 Hrs.)

Understanding the Harmony in the Society (Society Being an Extension of Family)

*Samadhan, Samridhi, Abhay, Sah-astitva*as comprehensive Human Goals Visualizing a universal harmonious order in society- Undivided Society (*AkhandSamaj),* Universal Order (*SarvabhaumVyawastha)*- from family to world family!

Understanding Harmony in the Nature and Existence - Whole existence as Co-existence

Understanding the harmony in the Nature; Interconnectedness and mutual fulfilment among the four orders of nature- recyclability and self-regulation in nature; Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space; Holistic perception of harmony at all levels of existence

UNIT-IV (4 Hrs.)

Implications of the above Holistic Understanding of Harmony on Professional Ethics

Natural acceptance of human values Definitiveness of Ethical Human Conduct; Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order; Competence in professional ethics:

1. Ability to utilize the professional competence for augmenting universal human order,
2. Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,
3. Ability to identify and develop appropriate technologies and management patterns for above
4. production systems;
5. Case studies of typical holistic technologies, management models and production systems; Strategy for transition from the present state to Universal Human Order:
6. At the level of individual: as socially and ecologically responsible engineers, technologists and managers
7. At the level of society: as mutually enriching institutions and organizations

Recommended Books

1. R.R. Gaur, R. Sangal, G.P. Bagaria, ‘A Foundation Course in Value Education’, **2009.**
2. Ivan Illich, ‘Energy & Equity’, The Trinity Press, Worcester, and Harper Collins, USA, **1974.**
3. E.F. Schumacher, ‘Small is Beautiful: A Study of Economics as if People mattered’, Blond & Briggs, Britain, **1973.**
4. A. Nagraj, ‘JeevanVidyaekParichay’, Divya Path Sansthan, Amarkantak, **1998.**
5. Sussan George, ‘How the Other Half Die’s’, Penguin Press, Reprinted **1986, 1991.**
6. P.L. Dhar, R.R. Gaur, ‘Science and Humanism’, Commonwealth Publishers, **1990**.
7. A.N. Tripathy, ‘Human Values’, New Age International Publishers, **2003.**
8. Subhas Palekar, ‘How to Practice Natural Farming’, Pracheen (Vaidik) Krishi Tantra Shodh, Amravati, **2000.**
9. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, ‘Limits to Growth - Club of Rome’s Report’, Universe Books, **1972.**
10. E.G. Seebauer & Robert L. Berry, ‘Fundamentals of Ethics for Scientists & Engineers’, Oxford University Press, **2000.**
11. M. Govindrajran, S. Natrajan& V.S. Senthil Kumar, ‘Engineering Ethics (including Human Values)’, Eastern Economy Edition, Prentice Hall of India Ltd.
12. B.P. Banerjee, ‘Foundations of Ethics and Management’, Excel Books, **2005.**
13. B.L. Bajpai, ‘Indian Ethos and Modern Management’, New Royal Book Co., Lucknow, **2004,** Reprinted **2008.**

INFORMATION TECHNOLOGY LAB

Subject Code: BITE1-103 **L T P C**
0 0 4 2

1. Familiarizing with PC and WINDOWS
2. Hardware: Input / Output devices installation and configuration.
3. Software: Application and System Software installation and usage
4. DOS internal & external commands.
5. MS Office: MS WORD, MS EXCEL & MS PowerPoint.
6. Internetworking: WWW, Email, Blogs, Social Networking, Search Engines etc.

PROGRAMMING LOGIC LAB.

Subject Code – BITE1-104 **L T P C**
0 0 4 2

Programming Fundamentals
1. Describe Procedural and Object-Oriented Programming Languages.
2. Identify How a Computer Processes and Stores Data.

Problem Solving and Algorithm Development
1. Describe The Process and Methods for Problem Recognition.
2. Define The Process of Algorithm Development.
3. Describe The Importance of Using a Structured Modular Approach to Program Development.
4. Analyse the Development of Procedural and Object-Oriented Problem Solutions.

Programming Logic
1. Demonstrate The Sequential and Selection Processing Control Structure.
2. Examine The Iteration Control Structure.
3. Apply Flowcharts to Represent Logic.

Structures, Verification, and Validation
1. Explain Array Structures.
2. Define Objects and Object-Oriented Classes.
3. Apply Arrays to Program Logic and Data Manipulation.
4. Verify Algorithms using Requirements and Desk Review Design.

File Processing
1. Differentiate Between Sequential and Direct Access.
2. Demonstrate Reading and Writing Sequential Files in Pseudocode.
3. Compare and Contrast Procedural and Object-Oriented Programming.

COMMUNICATION SKILLS-I LAB.

Subject Code: BHUM0-102 **L T P C**
0 0 2 1

The Communicative English Language Lab focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations and contexts.

Course Objectives
1. To expose the students to a variety of self-instructional, learner-friendly modes of language Course.

2. To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required facility to face computer-based competitive exams.
3. To enable them to learn pronunciation through stress on word accent, intonation, and rhythm.
4. To train them to use communication skills effectively for interviews, group discussions, public speaking etc.

Syllabus

The following course content is prescribed for Communicative English Laboratory sessions:

1. Introduction to the Sounds of English- Vowels, Diphthongs & Consonants.
2. Introduction to Stress and Intonation.
3. Situational Dialogues / Role Play.
4. Oral Presentations- Prepared and Extempore.
5. 'Just A Minute' Sessions (JAM).
6. Describing Objects / Situations / People.
7. Information Transfer
8. G.D. and Debate

The teacher may use following different classroom techniques to give practice and monitor the progress of the students:

1. Role Play
2. Question-Answer
3. Discussion
4. Presentation of Papers
5. Seminars etc.

Minimum Requirement

The Communicative English Language Lab shall have two parts:

1. The Computer aided Language Lab for 30 students with 30 systems, one master console, LAN facility and English language software for self- study by learners.
2. The Communication Skills Lab with movable chairs and audio-visual aids with a P.A System & a LCD projector/ T.V.

System Requirement (Hardware Component)

Computer network with *LAN* with minimum 30 multimedia systems

Suggested Software

1. Cambridge Advanced Learners' English Dictionary with CD.
2. The Rosetta stone English Library
3. Clarity Pronunciation Power – Part I
4. Mastering English in Vocabulary, Grammar, Spellings, Composition
5. Dorling Kindersley series of Grammar, Punctuation, Composition etc.
6. Language in Use, Foundation Books Pvt. Ltd with CD.
7. Oxford Advanced Learner's Compass, 7th Edition
8. Course to Speak English - 4 CDs
9. Microsoft Encarta with CD
10. Murphy's English Grammar, Cambridge with CD.
11. English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge

Recommended Books

Books Suggested for English Language Lab Library (to be located within the lab in addition to the CDs of the text book which are loaded on the systems):

1. Spoken English (CIEFL) in 3 volumes with 6 cassettes, OUP.
2. English Pronouncing Dictionary, Daniel Jones Current Edition with CD.
3. R.K. Bansal and J.B. Harrison, 'Spoken English', Orient Longman,**2006**.

4. A. Ramakrishna Rao, G. Natanam&S.A. Sankaranarayanan, 'English Language Communication: A Reader cum Lab Manual', Anuradha Publications, Chennai.
5. Krishna Mohan & N.P. Singh, 'Speaking English Effectively', Macmillan.
6. J. Sethi, KamleshSadanand& D.V. Jindal, 'A Practical Course in English Pronunciation, (with two Audio cassettes)', Prentice-Hall of India Pvt. Ltd., New Delhi.
7. T. Balasubramanian, 'A Text Book of English Phonetics for Indian Students', Macmillan.
8. 'English Skills for Technical Students**,** WBSCTE' with British Council, OL.

Course Outcomes:

The students after undertaking this course will be able to:

1. Understand and Appreciate the Need of Communication Skills in Personal and Professional Life.
2. Use Different Medias/Channels of Communication and Select the Most Appropriate for a Given Situation.
3. Speak and Present himself/herself Professionally and Socially Effectively Through Effective Talks, Resumes, Interviews etc.

COMMUNICATION SKILLS- II

Subject Code: BHUM0-213 **L T P C** **Duration: 40 Hrs.**
3 1 0 4

UNIT-I (10 Hrs.)

Introduction to Business Communication Meaning and Definition; process and classification of communication; elements & characteristics of communication; barriers to effective communication in business organization; Formal and Informal communication; grapevine, importance of effective communication in business house; Principals of effective communication

UNIT-II (10 Hrs.)

Writing Skills Inter-office memorandums; faxes; E-mails; writing effective sales letters - to agents; suppliers; customers; report writing; project writing.

UNIT-III (10 Hrs.)

Curriculum Vitae (CV) Drafting a CV; writing job application and other applications; do's and don'ts while appearing for an Interview; types of interview.

UNIT-IV (10 Hrs.)

Presentation Skills, Introduction; need of good presentation skills in professional life; preparing a good presentation; group discussion; extempore speaking.

Recommended Books

1. M.V. Rodriguez, 'Effective Business Communication'.
2. Meenakshi Raman, Parkash Singh, 'Business Communication', Oxford University Press.

MATHEMATICS-II

Subject Code – BMAT0-206 **L T P C** **Duration - 42 Hrs.**
3 1 0 4

UNIT–I (10 Hrs.)

Probability: Definition, Addition law of Probability, Multiplication law, Binomial Distribution, Poisson Distribution, Normal Distribution**.**

UNIT–II (11 Hrs.)

Statistics and Applications of Logarithms: Introduction to Statistics, Measures of Central Tendency- Mean, Median and Mode, Measures of Dispersion, Mean Deviation, Standard

Deviation and Coefficient of Variation.
Problems related to Compound Interest, Depreciation and Annuities.

UNIT–III (10 Hrs.)

Differential Calculus: Introduction to Differentiation, Derivative of a Function of one variable, Power Functions, Sum and Product of two functions, Function of a Function, Differentiation by Method of Substitution, Maxima and Minima.

UNIT–IV (11Hrs.)

Integral Calculus: Indefinite Integral, Integration by Substitution, Integration by parts, Integration by Partial Fractions, Definite Integral, Rectification of Standard curves, Area bounded by standard curves.

RECOMMENED BOOKS:

1. B.S. Grewal, 'Engineering Mathematics', 7th Edn., Khanna Publishers.
2. S.C. Gupta and V.K. Kapoor, 'Fundamentals of Mathematical Statistics,'11th Edn., Sultan Chand & Sons.
3. H.K. Dass, 'Advanced Engineering Mathematics,' S. Chand & Company, Ltd.

OBJECT ORIENTED PROGRAMMING

Subject Code: BITE1-205 **L T P C** **Duration: 39 Hrs.**
3 1 0 4

UNIT-I (10 Hrs.)

Introduction: Object oriented programming approach, characteristics of object orientated languages, Bridging C & C++ (Overview of C Concepts). Structures and Unions: Declaration of structures, Accessing structure members, Structure Initialization, Arrays of structure, nested structures, structure with pointers, functions & structures, Unions, Structure/Union Versus Class in C++. Class Declaration: Data Members, Member Functions, Private and Public Members, Data Hiding and Encapsulation, Array within a class.

UNIT-II (10 Hrs.)

Class Function Definition: Member Function definition inside the class and outside the class, Friend Function, Inline Function, Static Members & Functions, Scope Resolution Operator, Private and Public Member Functions, Nesting of Member Functions. Creating Objects, accessing class data members, accessing member functions, Arrays of Objects, Objects as function arguments: Pass by value, Pass by reference, Pointers to Objects. Constructors and Destructors: Declaration and Definition, Default Constructors, Parameterized Constructors, Constructor Overloading, Copy Constructors. Destructors: Definition and use.

UNIT-III (10 Hrs.)

Inheritance - Extending Classes Concept of inheritance, Base class, Derived class, defining derived classes, Visibility modes: Private, public, protected; Single inheritance: Privately derived, publicly derived; Making a protected member inheritable, Access Control to private and protected members by member functions of a derived class, Multilevel inheritance, Nesting of classes. Function Overloading & Operator Overloading: Binary & Unary.

UNIT-IV (9 Hrs.)

Polymorphism: Definition, early Binding, Polymorphism with pointers, Virtual Functions, late binding, pure virtual functions. Input/output files: Streams, buffers & iostreams, header files, redirection, file input and output.

Recommended Books

1. E. Balagurusami, 'Object Oriented Programming with C++', 4th Edn., Tata McGraw Hill.

2. Robert Lafore, 'Object Oriented Programming in Turbo C++', 4th Edn., Galgotia Publications.
3. Bjarnan Stroustrup, 'The C++ Programming Language', 3rd Edn., Addison-Wesley Publishing Company.
4. R.S. Salaria, 'Object Oriented Programming Using C++', 4th Edn., Khanna Book Publishing.

FUNDAMENTAL OF DIGITAL ELECTRONICS

Subject Code: BITE1-206 **L T P C** **Duration: 38 Hrs.**
3 1 0 4

UNIT-I (10 Hrs.)

Number System: Decimal Number System, Binary Number System, Octal Number System, Hexa-decimal Number System, Conversion from One Number System to another, Arithmetic Operation without Changing the Base, 1's Complement and 2's Complement. Logic Gates: AND, OR, NOT, NAND, NOR, XOR, XNOR, NAND & NOR as Universal Gates, Logic Gates Applications.

UNIT-II (9 Hrs.)

Boolean Algebra: Introduction, Theorems, Simplification of Boolean Expression using Boolean Algebra, SOP & POS Forms, Realization of Boolean Expression using Gates, KMaps, Simplification of Boolean Expression using K-Maps. Combinational Logic Circuits: Half Adder & Half Subtractor, Full Adder & Full Subtractor, Parallel Binary Adder, Binary Adder/Subtractor.

UNIT-III (10 Hrs.)

Combinational Logic Circuits: Multiplexers &Demultiplexers, Implementation of Boolean equations using Multiplexer and Demultiplexer, Encoders & Decoders. Sequential Logic Circuits: Latch, Flip Flops- R-S Flip-Flop, J-K Flip-Flop, Master-Slave J-K Flip-Flop, Race Condition, Removing Race Condition, D Flip-Flop, T Flip-Flop, Applications of Flip-Flops.

UNIT-IV (9 Hrs.)

Counters: Clock Pulse Generator using 555 Timer as Monostable and Multivibrator, Design of Asynchronous Counters, Design of Synchronous Counters, Up-Down Counters, MOD-N Counters.

Recommended Books

1. Malvino, 'Digital Computer Electronics', 2nd Edn., McGraw Hill.
2. R.P. Jain, 'Modern Digital Electronics', 4th Edn., Tata McGraw Hill.
3. D. Morris Mano, 'Digital Logic & Computer Design', 2nd Edn., Prentice Hall India.
4. T.C. Bartee, 'Digital and Electronic Circuits', McGraw Hill.

ENVIRONMENTAL SCIENCE

Subject Code: BESE0-101 **L T P C** **Duration: 48 Hrs.**
2 0 0 2

Course Objectives:

1. To identify global environmental problems arising due to various engineering/industrial/ and technological activities and the science behind these problems
2. To realize the importance of ecosystem and biodiversity for maintaining ecological balance.
3. To identify the major pollutants and abatement devices for environmental management and sustainable development.

4. To estimate the current world population scenario and thus calculating the economic growth, energy requirement and demand.
5. To understand the conceptual process related with the various climatologically associated problems and their plausible solutions.

UNIT-1

1. The Multidisciplinary Nature of Environmental Studies (2 Hrs.)

Definition, scope and importance. Need for public awareness.

2. Natural Resources (Hrs.)

Renewable and Non-renewable Resources:

Natural resources and associated problems.

(a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
(b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
(c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
(d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
(e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
(f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
(g) Role of an individual in conservation of natural resources.
(h) Equitable use of resources for sustainable lifestyles.

UNIT-1I

3. Ecosystems (8 Hrs.)

(a) Concept of an ecosystem.
(b) Structure and function of an ecosystem.
(c) Producers, consumers and decomposers.
(d) Energy flow in the ecosystem.
(e) Ecological succession.
(f) Food chains, food webs and ecological pyramids.
(g) Introduction, types, characteristic features, structure and function of the following ecosystem:
    i) Forest ecosystem.
    ii) Grassland ecosystem.
    iii) Desert ecosystem.
    iv) Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries).

4. Biodiversity and its Conservation (6 Hrs.)

(a) Introduction – Definition: genetic, species and ecosystem diversity.
(b) Biogeographical classification of India.
(c) Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and
(d) option values.
(e) Biodiversity at global, national and local levels.
(f) India as a mega-diversity nation.
(g) Hot-spots of biodiversity.
(h) Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts.
(i) Endangered and endemic species of India.

(j) Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT-1II

5. Environmental Pollution (8Hrs.)

Definition

(a) Causes, effects and control measures of:
  i) Air pollution
  ii) Water pollution
  iii) Soil pollution
  iv) Marine pollution
  v) Noise pollution
  vi) Thermal pollution
  vii) Nuclear pollution

(b) Solid Waste Management: Causes, effects and control measures of urban and industrial wastes.

(c) Role of an individual in prevention of pollution.

(d) Pollution Case Studies.

(e) Disaster management: floods, earthquake, cyclone and landslides

6. Social Issues and the Environment (8 Hrs.)

(a) From unsustainable to sustainable development

(b) Urban problems and related to energy

(c) Water conservation, rain water harvesting, Watershed Management

(d) Resettlement and rehabilitation of people; its problems and concerns. Case studies.

(e) Environmental ethics: Issues and possible solutions

(f) Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.

(g) Wasteland reclamation

(h) Consumerism and waste products

(i) Environmental Protection Act

(j) Air (Prevention and Control of Pollution) Act

(k) Water (Prevention and control of Pollution) Act

(l) Wildlife Protection Act

(m) Forest Conservation Act

(n) Issues involved in enforcement of environmental legislation

(o) Public awareness

UNIT-1V

7. Human Population and the Environment (7 Hrs.)

(a) Population growth, variation among nations

(b) Population explosion – Family Welfare Programmes

(c) Environment and human health

(d) Human Rights

(e) Value Education

(f) HIV/AIDS

(g) Women and Child Welfare

(h) Role of Information Technology in Environment and Human Health

(i) Case Studies

8. Field Work (6 Hrs.)

(a) Visit to a local area to document environmental assets river/

(b) forest/grassland/hill/mountain

(c) Visit to a local polluted site – Urban / Rural / Industrial / Agricultural

(d) Study of common plants, insects, birds
(e) Study of simple ecosystems-pond, river, hill slopes, etc (Field work equal to 5 lecture hours)

Recommended Books

1. J.G. Henry and G.W. Heinke, 'Environmental Sc. & Engineering', Pearson Education, **2004.**
2. G.B. Masters, 'Introduction to Environmental Engg. & Science', Pearson Education, **2004.**
3. ErachBharucha, 'Textbook for Environmental Studies', UGC, New Delhi.

OBJECT ORIENTED PROGRAMMING LAB.

Subject Code: BITE1-207 **L T P C**
0 0 4 2

1. [Classes and Objects] Write a program that uses a class where the member functions are defined inside a class.
2. [Classes and Objects] Write a program that uses a class where the member functions are defined outside a class.
3. [Classes and Objects] Write a program to demonstrate the use of static data members.
4. [Classes and Objects] Write a program to demonstrate the use of const data members.
5. [Constructors and Destructors] Write a program to demonstrate the use of zero argument and parameterized constructors.
6. [Constructors and Destructors] Write a program to demonstrate the use of dynamic constructor.
7. [Constructors and Destructors] Write a program to demonstrate the use of explicit constructor.
8. [Initializer Lists] Write a program to demonstrate the use of initializer list.
9. [Operator Overloading] Write a program to demonstrate the overloading of increment and decrement operators.
10. [Operator Overloading] Write a program to demonstrate the overloading of binary arithmetic operators.
11. [Operator Overloading] Write a program to demonstrate the overloading of memory management operators.
12. [Typecasting] Write a program to demonstrate the typecasting of basic type to class type.
13. [Typecasting] Write a program to demonstrate the typecasting of class type to basic type.
14. [Typecasting] Write a program to demonstrate the typecasting of class type to class type.
15. [Inheritance] Write a program to demonstrate the multilevel inheritance.
15. [Inheritance] Write a program to demonstrate the multiple inheritance.
16. [Inheritance] Write a program to demonstrate the virtual derivation of a class.
17. [Polymorphism] Write a program to demonstrate the runtime polymorphism.
18. [Exception Handling] Write a program to demonstrate the exception handling.
19. [Templates and Generic Programming] Write a program to demonstrate the use of function template.
20. [Templates and Generic Programming] Write a program to demonstrate the use of class template.
21. [File Handling] Write a program to copy the contents of a file to another file byte by byte. The name of the source file and destination file should be taken as command-line arguments,
22. [File Handling] Write a program to demonstrate the reading and writing of mixed type of data.

23. [File Handling] Write a program to demonstrate the reading and writing of objects.

DIGITAL ELECTRONIC LAB.

Subject Code: BITE1-208 **L T P C**
0 0 4 2

To study the function of basic logic gates and verify the truth table of AND, OR, NOT, X OR, NAND, NOR.

1. To study applications of AND, OR, NAND, X-OR gates for gating digital signals.
2. To develop the different Arithmetic Circuits:
   a. Half-Adder and Subtractor. b. Full-Adder and Subtractor.
3. To study the BCD to binary and binary to BCD Code converter.
4. Study of Decoder Circuits: a. BCD-to-Decimal Decoder b. BCD-to-7-Segment Decoder
5. Study of Encoder Circuits: a. BCD-to-Decimal Encoder b. Octal-to-Binary Encoder
6. To study the flip flop circuit using Gates:
   a. R-S Flip Flop b. J-K Flip Flop c. Master Slave J-K Flip Flop d. D-Flip Flop
7. To study R-S, J-K and D Flip Flop Using IC's.
8. Study of Ring Counter.
9. Study of Asynchronous and Synchronous Counters.

DATA STRUCTURE

Subject Code: BITE1-309 **L T P C** **Duration: 40 Hrs.**
3 1 0 4

UNIT-I (12 Hrs.)

Introduction to Data Structures: Basic concept of data, Problem analysis, algorithm complexity, Big O notation and time space trade off, Types of data structures: arrays records, pointers, stack, queue, trees, linked list packet, blocks, tracks, sector (in storage devices). Searching and Sorting: Use of various data structures for searching and sorting, linear and binary search, bubble sort, insertion sort, selection sort.

UNIT-II (10 Hrs.)

Stacks & Queues: Basics of stacks and queues, Recursion, Polish notation, circular Queues, priority Queues.

UNIT-III (9 Hrs.)

Linked Lists: Single linked list, Circular linked list, doubly linked list and Dynamic storage management, generalized list, Garbage Collection.

UNIT-IV (9 Hrs.)

Trees: Definition & Concepts, Basic trees, Binary tree representations, Binary tree traversals and application of trees

Recommended Books

1 Lipschutz Seymour, 'Data Structures,' 2nd Edn., TMH.
2 Tanenbaum, 'Data Structures,' Paperback Edition.
3 Trembley & Soreson, 'An Introduction to Data Structures Applications,' 2nd Edn.

COMPUTER SYSTEM ARCHITECTURE

Subject Code: BITE1-310 **L T P C** **Duration: 44 Hrs.**
3 1 0 4

UNIT-I (12 Hrs.)

Introduction to Computer Organization: Introduction to Computer and CPU (Computer Organization, Computer Design and Computer Architecture), Stored Program Concept- Von Neumann Architecture. Introduction to Flynn's Classification- SISD, SIMD, MIMD, Register Transfer and Micro operations- Introduction to Registers, Register Transfer Language, Data movement among Registers and Memory.

Micro Operations: Introduction to micro operations, Types of micro operations—Logic Operations, Shift operations, Arithmetic and Shift operations. Common Bus System: Introduction to Common Bus System, Types of Buses (Data Bus, Control Bus, Address Bus), 16-bit Common Bus System--Data Movement among registers using Bus.

UNIT-II (12 Hrs.)

Basic Computer Instructions- Introduction to Instruction, Types of Instructions (Memory Reference, I/O Reference and Register Reference), Instruction Cycle, Instruction Formats (Direct and Indirect Address Instructions, Zero Address, One Address, Two Address and Three Address Instructions)

Interrupt: Introduction to Interrupt and Interrupt Cycle. Design of Control Unit: Introduction to Control Unit, Types of Control Unit (Hardwired & Micro programmed Control Unit). Addressing Modes-Introduction & different types of Addressing Modes.

UNIT-III (10 Hrs.)

I/O Organization: I/O Interface Unit, types of ports (I/O port, Network Port, USB port, Serial and Parallel Port), Concept of I/O bus, Isolated I/O versus Memory Mapped I/O. I/O Data Transfer Techniques: Programmed I/O, Interrupt Initiated I/O, DMA Controller and IOP. Synchronous and Asynchronous Data Transfer: Concept of strobe and handshaking, source and destination initiated data transfer.

UNIT-IV (10 Hrs.)

Stack Organization: Memory Stack and Register Stack Memory organization: Memory Hierarchy, Main Memory (RAM and ROM chips, Logical and Physical Addresses, Memory Address Map, Memory Connection to CPU), Associative Memory Cache Memory: Cache Memory (Initialization of Cache Memory, writing data into Cache, Locality of Reference, Hit Ratio), Replacement Algorithms (LRU and FIFO).

Cache Memory Mapping Techniques: Direct Mapping, Associative Mapping and Set-Associative Mapping. Harvard Architecture, Mobile Devices Architecture (Android, Symbian and Windows Lite), Layered Approach Architecture.

Recommended Books

1. M.M. Mano, 'Computer System Architecture,' Third Edition, PHI
2. J.P. Hayes, 'Computer Organization and Architecture,' Third Edition, TMH
3. Stallings, 'Computer Organization and Architecture,' Eighth Edition, PHI.

OPERATING SYSTEM

Subject Code: BITE1-311 **L T P C** **Duration: 38 Hrs.**
3 1 0 4

UNIT-I (10 Hrs.)

Introduction: Application programs and system programs; functions of an operating system; classification of operating Systems-Multi-user, multiprogramming, multiprocessing, time sharing, multi-threaded. Subsystems – Top Layer, Middle Layer, Bottom Layer, Bootstrap, Protection and security. Processes and Threads: Program vs. Process; Process context, address space, identification, transition, state & management. Thread management-benefits, synchronization issues; applications of threads.

UNIT-II (9 Hrs.)

CPU Management: Objectives, Pre-emptive vs. Non-pre-emptive, context switching, scheduling schemes; multi-processor scheduling, thread scheduling. Inter-process Communications: Introduction, message passing model, shared memory model. Pipe, FIFO and Socket.

UNIT-III (10 Hrs.)

Memory Management: Introduction, address binding, relocation, loading, linking, memory sharing and protection; Paging and segmentation; Virtual memory: basic concepts of demand paging, performance, page replacement. Thrashing. I/O Device Management: I/O devices and controllers, device drivers; disk storage, scheduling and management.

UNIT-IV (9 Hrs.)

File Management: Basic concepts, file operations, access methods, directory structures and management, remote file systems; file protection. Protection & Security: Need, environments: software, hardware, unauthorized use, denial of services, access control and authentication. Application security, attacks, virus & anti-virus, firewall.

Recommended Books

1. Abraham Silberschatz and Peter Baer Galvin, 'Operating System Principles ,7th Edn., Wiley-India
2. Sibsankar Haldar and Alex A. Aravind, 'Operating Systems,' Pearson Education.
3. W. Stalling, 'Operating System,' 6th Edn., Prentice Hall.

SYSTEM PROGRAMMING

Subject Code: BITE1-312 **L T P C**
0 0 4 2

Course Objectives: This course provides knowledge to design various system programs.

1. Introduction: Introduction to system programming and different types of system programs – editors, assemblers, macro-processors, compilers, linkers, loader, debuggers.
2. Assemblers: Description of single pass and two pass assemblers, use of data structures like
3. OPTAB and SYMTAB, etc.
4. Macro processors: Description macro expansion of macros, macro expansion, conditional
5. and recursive
6. Compilers: Various phases of compiler – lexical, syntax and semantic analysis,
7. intermediate code generation, code optimization techniques, code generation, Case study :

8. LEX and YACC. [9]
9. Linkers and Loaders: Concept of linking, different linking schemes, concept of loading and various loading schemes.
10. Editors: Line editor, full screen editor and multi window editor, Case study MS-Word,
11. DOS Editor and vi editor.
12. Debuggers: Description of various debugging techniques.

Recommended Books

1. J.J. Donovan., 'Systems Programming', New York, McGraw Hill, **1972**.
2. D.M. Dhamdhere, 'Introduction to Systems Software,' Tata McGraw Hill, **1996.**
3. Aho A.V. and J.D. Ullman, 'Principles of compiler Design', Addison Wesley/ Narosa. **1985**.
4. Kenneth C. Louden, 'Compiler Construction,' Cengage Course.

DATA STRUCTURE LAB.

Subject Code: BITE1-313 **L T P C**
0 0 4 2

Note: Program should be fully documented with sample I/O. Data Flow charts should be developed wherever necessary.

Write an Algorithm and Program using functions for:

1. Program using Recursion.
2. Traversing the elements of an Array
3. Inserting an element in an Array
4. Deleting an element from an Array
5. Merging of two Arrays
6. Linear Search
7. Binary Search
8. Insertion Sort
9. Bubble Sort
10. Selection Sort
11. Implementing PUSH & POP operations of a Stack
12. Array Implementation of a Queue and Circular Queue
13. Converting infix notation into post fix notation
14. Insertion in single and double Linked List
15. Deletion from single and double Linked List

OPERATING SYSTEM LAB.

Subject Code: BITE1-314 **L T P C**
0 0 4 2

1. Installation Process of various operating systems.
2. Virtualization, Installation of Virtual Machine Software and installation of Operating System on Virtual Machine.
3. Commands for files & directories in Linux: cd, ls, cp, md, rm, mkdir, rmdir. Creating and viewing files using cat. File comparisons. Disk related commands: checking disk free spaces. Processes in linux, connecting processes with pipes, background processing managing multiple processes. Manual help. Background process: changing process priority, scheduling of processes at command, batch commands, kill, ps, who, sleep.
4. Printing commands, grep, fgrep, find, sort, cal, banner, touch, file. File related commands

ws, sat, cut, grep.

5. Shell Programming: Basic of shell programming, various types of shell, Shell programming in bash, conditional & looping statement, case statements, parameter passing and arguments, shell variables, shell keywords, creating shell programs for automate system tasks, report printing.

MANAGEMENT INFORMATION SYSTEMS

Subject Code: BITE1-356 **L T P C** **Duration: 38 Hrs.**
3 1 0 4

Course Objectives: The course aims at providing fundamental knowledge and exposure to the concepts, theories and practices in the field of MIS. The course will explain the relationship among and between information systems and management, analyse how technology can be used to synthesize complex data to make sound business decisions.

UNIT-I (10 Hrs.)

Introduction: Definition, characteristics & significance of MIS. Introduction to business systems: Operations Support Systems, Management Support Systems, Expert Systems, and Knowledge Management Systems. Information Concepts: Data Vs Information, types of information, quality of information.

UNIT-II (9 Hrs.)

Decision Making: Simon's model of decision making, structured & unstructured decisions. **Database Management:** Objectives, role, advantages & disadvantages of DBMS, SQL, use of databases for integration across functional areas. Introduction to Decision Support System.

UNIT-III (10 Hrs.)

Design Methodology & Techniques: System development life cycle, software development models. System Analysis – SRS, DFD, DD & Decision tables. System Design – design methods, detailed system design, design documentation. System Implementation & testing.

UNIT-IV (9 Hrs.)

Implementation & Evaluation: Planning, organizing, testing & changeover. Evaluation approaches. Brief introduction of emerging concepts and issues in Information Systems: Supply Chain Management, Customer Relationship Management, ERP, Data Warehousing, Data Mining.

Recommended Books

1. D.P. Goyal, 'Management Information Systems,' MacMillan.
2. Davis & Olson, 'Management Information Systems'.
3. Murdick, Ross & Clagett, 'Information Systems for Management'.
4. Kenneth, Laudon and Jane Laudon MIS, 'Managing the Digital Firm', Pearson Education.

E-COMMERCE

Subject Code: BITE1-357 **L T P C** **Duration: 38 Hrs.**
3 0 0 3

Course Objectives: The objective of the course is to acquaint the students with E-Business in competing International markets.

UNIT-I (10 Hrs.)

Introduction to E-Commerce and E- Business: Definition and competing in the digital economy – Forces Fueling E-commerce and E- Business Models - Environment of E-Business, Economics and social impact of E- Business, opportunities and Challenges.

UNIT-II (9 Hrs.)

Industry framework and types, Structure and organization of E-Business, Communications – Internet Service Providers, Internet access provider, Internet Vs. Online Services, WWW: Concepts, Technology, Applications and services offered in the Internet. EDI, EFT, Electronic Payment Systems, Industry applications like online banking and other business applications. Electronic Payment Technology, Digital Cash, Electronic check, On-line Credit Card; Electronic Commerce and Banking; Changing dynamics in the banking Industry, Home banking Implementation approaches, Open Vs. Closed models, Management issues in online banking.

UNIT-III (10 Hrs.)

Supply chain Management: Supply chain Integration and coordination, importance of supply chain management, objective and methodology of supply chain management, CRM - online sales force, online customer service and support, Technology and Marketing Strategy: Intranets and manufacturing Integrated logistics, agile manufacturing, Internet Marketing. Manufacturing Information Systems, Intranet based manufacturing logistics Management

UNIT-IV (9 Hrs.)

Security Issues in e-business: Security Overview, Electronic Commerce Threats, Encryption, Cryptography, Public Key and Private Key Cryptography, Digital Signatures, Digital Certificates, Securing E-commerce Networks: Security Protocols such as HTTP, SSL, Firewalls, Personal Firewalls, IDS, VPNs, Public Key Infrastructure(PKI) for Security.

Recommended Books

1. Cady, G H and Part McGreger, 'The Internet', BPB Pub.
2. Keen, Peter and Mark McDonald, 'The e-Process Edge,' Tata McGraw Hill.
3. Mann, Catherine, L. Global, 'Electronic Commerce', Institute for International Economics.
4. Oberoi, Sundeep, 'E-Security and You,' Tata McGraw Hill.
5. Rich, R. Jason, 'Starting an E-Commerce Business,' IDG Books, Delhi,

MULTIMEDIA AND APPLICATION

Subject Code: BITE1-358 **L T P C** **Duration: 38 Hrs.**
3 0 0 3

Course Objectives: This Course introduces the multimedia systems and their applications to students. This course covers the different compression standards used in multimedia, some current technology and related issues.

UNIT-I (10 Hrs.)

Introduction: Multimedia and its types, Introduction to Hypermedia, Hyper Text, Multimedia Systems and their Characteristics, Challenges, Desirable Features, Components and Applications, Trends in Multimedia.

Multimedia Technology: Multimedia Systems Technology, Multimedia Hardware devices, Multimedia software development tools, Multimedia Authoring Tools, Multimedia Standards for Document Architecture, SGML, ODA, Multimedia Standards for Document interchange, MHEG, Multimedia Software for different media.

UNIT-II (9 Hrs.)

Storage Media: Magnetic and Optical Media, RAID and its levels, Compact Disc and its standards, DVD and its standards, Multimedia Servers.

Audio: Basics of Digital Audio, Application of Digital Audio, Digitization of Sound, Sample Rates and Bit Size, Nyquist's Sampling Theorem Typical Audio Formats Delivering Audio over a Network, Introduction to MIDI (Musical Instrument Digital Interface), Components of a MIDI System Hardware Aspects of MIDI, MIDI Messages. Audio Compression, Simple Audio Compression Methods, Psychoacoustics, MPEG Audio Compression.

UNIT-III (10 Hrs.)

Basics of Compression: Classifying Compression Algorithms, Lossless Compression Algorithms, Entropy Encoding, Run-length Encoding, Pattern Substitution, Basics of Information theory, Huffman Coding, Adaptive Huffman Coding, Arithmetic Coding, Lempel-Ziv-Welch (LZW) Algorithm, Source Coding Techniques: Transform Coding, Frequency Domain Methods, Differential Encoding.

Image and Graphics Compression: Colour in Images, Types of Colour Models, Graphic/Image File Formats: TIFF, RIFF, BMP, PNG, PDF, Graphic/Image Data, and JPEG Compression, GIF Compression.

UNIT-IV (9 Hrs.)

Video Compression: Basics of Video, Video Signals, Analog Video, Digital Video, TV standards, H. 261 Compression, Intra Frame Coding, Inter-frame (P-frame) Coding, MPEG Compression, MPEG Video, The MPEG Video Bitstream, Decoding MPEG Video in Software.

Multimedia Communication: Building Communication network, Application Subsystem, Transport Subsystem, QOS, Resource Management, Distributed Multimedia Systems.

Recommended Books

1. Ralf Steinmetz amd Klara NaHrs.tedt, 'Multimedia Computing Communications and Applications', Pearson Educations.
2. Parag Havaldar, Gerard Medioni, 'Multimedia Systems Design', PHI.

COMPUTER NETWORKS

Subject Code: BITE1-415 **L T P C** **Duration: 38 Hrs.**
3 1 0 4

Course Objectives: This course provides knowledge about computer network related hardware and software using a layered architecture.

UNIT-I (10 Hrs.)

Introduction to Computer Networks: Data Communication System and its components, Data Flow, Computer network and its goals, Types of computer networks: LAN, MAN, WAN, Wireless and wired networks, broadcast and point to point networks, Network topologies, Network software: concept of layers, protocols, interfaces and services, ISO OSI reference model, TCP/IP reference model.

Physical Layer: Concept of Analog & Digital Signal, Bandwidth, Transmission Impairments: Attenuation, Distortion, Noise, Data rate limits: Nyquist formula, Shannon Formula, Multiplexing: Frequency Division, Time Division, Wavelength Division, Introduction to Transmission Media: Twisted pair, Coaxial cable, Fiber optics, Wireless transmission (radio, microwave, infrared), Switching: Circuit Switching, Message Switching, Packet Switching & their comparisons

UNIT-II (9 Hrs.)

Data Link Layer: Design issues, Framing, Error detection and correction codes: checksum, CRC, hamming code, Data link protocols for noisy and noiseless channels, Sliding Window Protocols: Stop & ARQ, Selective repeat ARQ, Data link protocols: HDLC and PPP.

4. Medium Access Sub-Layer: Wait ARQ, Go-back-N Static and dynamic channel allocation, **Random Access:** ALOHA, CSMA protocols, Controlled Access: Polling, Token Passing, IEEE 802.3 frame format, Ethernet cabling, Manchester encoding, collision detection in 802.3, Binary exponential back off algorithm.

UNIT-III (10 Hrs.)

Network Layer: Design issues, IPv4 classful and classless addressing, subnetting, Routing algorithms: distance vector and link state routing, Congestion control: Principles of Congestion Control, Congestion prevention policies, Leaky bucket and token bucket algorithms

Transport Layer: Elements of transport protocols: addressing, connection establishment and release, flow control and buffering, multiplexing and de-multiplexing, crash recovery, introduction to TCP/UDP protocols and their comparison.

UNIT-IV (9 Hrs.)

Application Layer: World Wide Web (WWW), Domain Name System (DNS), E-mail, File Transfer Protocol (FTP), Introduction to Network security.

Recommended Books

1. Andrew S. Tanenbaum, 'Computer Networks,' 4th Edn., Pearson Education.
2. Behrouz A. Forouzan, 'Data Communication & Networking,' 4th Edn., Tata McGraw Hill.
3. James F. Kurose and Keith W. Ross, 'Computer Networking,' 3rd Edn., Pearson Education.
4. Douglas E. Comer, 'Internetworking with TCP/IP, Volume-I,' Prentice Hall, India.
5. Greg Tomsho, 'Guide to Networking Essentials', 5th Edn., Cengage Course.
6. Michael W. Graves., 'Handbook of Networking,' Cengage Course.

EMBEDDED SYSTEM

Subject Code: BITE1-416 **L T P C** **Duration: 38 Hrs.**
3 1 0 4

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UNIT-I (10 Hrs.)

Introduction: Embedded Systems and general purpose computer systems, history, classifications, applications and purpose of embedded systems Core of embedded systems: microprocessors and microcontrollers, RISC and CISC controllers, Big endian and Little endian processors, Application specific ICs, Programmable logic devices, COTS, sensors and actuators, communication interface, embedded firmware, other system components, PCB and passive components.

UNIT-II (9 Hrs.)

Characteristics and Quality attributes of Embedded Systems: characteristics, operational and non-operational quality attributes, application specific embedded system – washing machine, domain specific – automotive

UNIT-III (10 Hrs.)

Programming Embedded Systems: structure of embedded program, infinite loop, compiling, linking and locating, downloading and debugging.

UNIT-IV (9 Hrs.)

Peripherals: Control and Status Registers, Device Driver, Timer Driver- Watchdog Timers, Embedded Operating System, Real-Time Characteristics, Selection Process Unit-VI Design and Development: embedded system development environment – IDE, types of file generated on cross compilation, disassembler/ decompiler, simulator, emulator and debugging, embedded product development life-cycle, trends in embedded industry.

Recommended Books

1. Michael Barr, O'Reilly, 'Programming Embedded Systems in C and C++', 1st Edn.,
2. K.V. Shibu, 'Introduction to Embedded Systems', Tata McGraw Hill.
3. Rajkama, 'Embedded Systems', Tata McGraw Hill.

DATA BASE MANAGEMENT SYSTEMS

Subject Code: BITE1-417 **L T P C** **Duration: 38 Hrs.**
3 1 0 4

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UNIT-I (10 Hrs.)

An Overview of DBMS: Concept of File Processing Systems and database systems, Database Administrator and his responsibilities. Physical and Logical data independence. Three level Architecture of Database System: the external level, conceptual level and the internal level.

UNIT-II (9 Hrs.)

Introduction to Data Models: Entity Relationship Model, Hierarchical, Network and Relational Model. Comparison of Network, Hierarchical and Relational Model.

UNIT-III (10 Hrs.)

Relational Data Model: Relational database, relational algebra and calculus, SQL dependencies, functional dependency, multi-valued dependency and join, normalization

UNIT-IV (9 Hrs.)

Database Protection: Recovery, Concurrency Management, Database Security, Integrity and Control, Disaster Management Distributed databases: Structure of a distributed database, design of distributed databases.

Recommended Books

1. Bipin C. Desai, 'An Introduction to Database System', Galgotia Publications.
2. C.J. Date, 'An Introduction to Data Base Systems', 8th Edn., Narosa Publications.
3. Henry F. Korth,'Database System Concepts', 5th Edn., McGraw Hill.
4. Naveen Prakash,'Introduction to Database Management', TMH.
5. Ullman, 'Principles of Database Systems', 2nd Edn,, Galgotia Publications.
6. Rob Coronel, 'Database Systems: Design, Implementation, and Management', 9th Edn.

SYSTEM ANALYSIS AND DESIGN

Subject Code: BITE1-418 **L T P C** **Duration: 38 Hrs.**
3 1 0 4

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UNIT-I (10 Hrs.)

System Development Life Cycle: System Definition, characteristics, elements & types of system, Phases of SDLC, Information gathering tools, Structured Analysis tools, Role of System Analyst.

UNIT-II (9 Hrs.)

System Design: Process and stages of systems design, Input / Output and file design, Documentation (User Manual, Design Documentation, Training Manual), Case Study techniques in system design.

UNIT-III (10 Hrs.)

System Testing: Unit Testing, System Testing, Integration Testing, Alpha & Beta Testing, Acceptance Testing, Regression Testing.

UNIT-IV (9 Hrs.)

System Implementation: System implementation Process, Implementation methods, System maintenance, Post implementation maintenance.

Recommended Books

1. Awad Elias N., 'System Analysis and Design', 2nd Edn., Galgotia Publications.
2. A Sen James, 'Analysis and Design of Information System', 2nd Edn., Tata McGraw Hill.

COMPUTER NETWORKS LAB.

Subject Code: BITE1-419 **L T P C**
0 0 2 1

1. Write specifications of latest desktops and laptops.
2. Familiarization with Networking Components and devices: LAN Adapters, Hubs, Switches, Routers etc.
3. Familiarization with Transmission media and Tools: Co-axial cable, UTP Cable, Crimping Tool, Connectors etc.
4. Preparing straight and cross cables.
5. Study of various LAN topologies and their creation using network devices, cables and computers.
6. Configuration of TCP/IP Protocols in Windows and Linux.
7. Implementation of file and printer sharing.
8. Designing and implementing Class A, B, C Networks
9. Subnet planning and its implementation
10. Installation of ftp server and client.

DATABASE MANAGEMENT SYSTEM LAB.

Subject Code: BITE1-420 **L T P C**
0 0 2 1

1. Familiarization with MS Access: Features, Elements, Parts of MS Access Window,
2. Creating and Saving Database, and Tables.
3. Using Queries: Running various DDL and DML commands using SQL,
4. Creating Views.
5. Using Forms and Reports in MS Access.
6. Introductory Practicals on using Crystal Reports.

DESIGN & ANALYSIS OF ALGORITHMS

Subject Code: BITE1-459 **L T P C** **Duration: 38 Hrs.**
3 0 0 3

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Course Objectives: To learn the ability to distinguish between the tractability and intractability of a given computational problem. To be able to devise fast and practical algorithms for real-life problems using the algorithm design techniques and principles learned in this course.

UNIT-I (10 Hrs.)

Introduction: What is an algorithm? Time and space complexity of an algorithm. Comparing the performance of different algorithms for the same problem. Different orders of growth. Asymptotic notation. Polynomial vs. Exponential running time.

Basic Algorithm Design Techniques: Divide-and-conquer, greedy, randomization, and dynamic programming. Example problems and algorithms illustrating the use of these techniques.

UNIT-II (9 Hrs.)

Graph Algorithms: Graph traversal: breadth-first search (BFS) and depth-first search (DFS). Applications of BFS and DFS. Topological sort. Shortest paths in graphs: Dijkstra and Bellman-Ford. Minimum spanning trees.

Sorting and Searching: Binary search in an ordered array. Sorting algorithms such as Merge sort, Quick sort, Heap sort, Radix Sort, and Bubble sort with analysis of their running times. Lower bound on sorting. Median and order statistics.

UNIT-III (10 Hrs.)

Programming Embedded Systems: Structure of embedded program, infinite loop, compiling, linking and locating, downloading and debugging.

NP-completeness: Definition of class NP. NP-hard and NP-complete problems. 3SAT is NP-complete. Proving a problem to be NP-complete using polynomial-time reductions. Examples of NP-complete problems.

Coping with NP-completeness: Approximation algorithms for various NP-complete problems.

UNIT-IV (9 Hrs.)

Advanced Topics: Pattern matching algorithms: Knuth-Morris-Pratt algorithm. Algorithms in Computational Geometry: Convex hulls. Fast Fourier Transform (FFT) and its applications. Integer and polynomial arithmetic. Matrix multiplication: Strassen's algorithm.

Recommended Books

1. J. Kleinberg and E. Tardos, 'Algorithm Design'.
2. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, 'Introduction to Algorithms'.
3. S. Dasgupta, C.H. Papadimitriou and U.V. Vazirani, 'Algorithms'.
4. Michael T. Goodrich and Roberto Tamassi, 'Algorithm Design: Foundations, Analysis, and Internet Examples'.
5. A.V. Aho, J.E. Hopcroft and J.D. Ullman, 'The Design and Analysis of Computer Algorithms'.
6. Donald Knuth, 'The Art of Computer Programming', Vol. 1, 2, and 3.

COMPUTER PERIPHERALS AND INTERFACES

Subject Code: BITE1-460 **L T P C** **Duration: 38 Hrs.**

3 0 0 3

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UNIT-I (10 Hrs.)

System Resources: Interrupt, DMA Channel, I/O Port Addresses and resolving and resolving the conflict of resources. I/O buses- ISA, EISA, Local bus, VESA Local bus, PCI bus, PCI Express, Accelerated graphics port bus.

IDE & SCSI Interfaces: IDE origin, IDE Interface ATA standards ATA1 to ATA7. ATA feature, ATA RAID and SCSI RAID, SCSI Cable and pin Connector pin outs SCSI V/s IDE Advantages and limitation.

UNIT-II (9 Hrs.)

Video Hardware: Video display technologies, DVI Digital signals for CRT Monitor, LCD Panels, Video adapter types, Integrated Video/ Motherboard chipset, Video RAM, Video driver and multiple Monitor, Graphic accelerators. Advanced 3D Technologies, TV Tuner and Video Capture upgrades troubleshooting Video Cards and Drivers.

I/O Interfaces: I/O Interfaces from USB and IEEE1394, I/O Interface from serial and Parallel to IEEE1394 and USB 961, Parallel to SCSI converter. Testing of serial and parallel port, USB Mouse/ Keyboard Interfaces.

UNIT-III (10 Hrs.)

Input/Output Driver software aspects: Role of device driver DOS and UNIX/ LINUX device drivers.

Design & Integration of Peripheral devices to a computer system as a Case Study

UNIT-IV (9 Hrs.)

Future Trends: Detailed Analysis of recent Progress in the Peripheral and Bus systems. Some aspects of cost Performance analysis while designing the system

Recommended Books

1. Douglas V. Hall, 'Microprocessors and Interfacing', Tata McGraw Hill, **2006.**
2. Barry B. Brey & C.R. Sarma, 'The intel Microprocessors', Pearson, **2003.**
3. P. Pal Chandhari, 'Computer Organization and Design', Prentice Hall of India Pvt. Ltd., **1994.**
4. Del Corso, H. Kirrman, J.D. Nicond, 'Microcomputer Buses & Links', Academic Press **1986.**

ENTERPRISE RESOURCE PLANNING

Subject Code: BITE1-461 **L T P C** **Duration: 38 Hrs.**
3 1 0 4

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UNIT-I (10 Hrs.)

ERP AND TECHNOLOGY: Introduction – Related Technologies – Business Intelligence – E-Commerce and E-Business – Business Process Reengineering – Data Warehousing – Data Mining – OLAP – Product life Cycle management – SCM – CRM.

UNIT-II (9 Hrs.)

ERP IMPLEMENTATION: Implementation Challenges – Strategies – Life Cycle – Pre-implementation Tasks – Requirements Definition – Methodologies – Package selection – Project Teams –Process Definitions – Vendors and Consultants – Data Migration – Project management – Post Implementation Activities.

. **UNIT-III (10 Hrs.)**

ERP IN ACTION & BUSINESS MODULES: Operation and Maintenance – Performance – Maximizing the ERP System – Business Modules – Finance – Manufacturing – Human Resources – Plant maintenance – Materials Management – Quality management – Marketing – Sales, Distribution and service.

UNIT-IV (9 Hrs.)

ERP MARKET: Marketplace – Dynamics – SAP AG – Oracle – PeopleSoft – JD Edwards – QAD Inc – SSA Global – Lawson Software – Epicor – Intutive.

ERP Application: Enterprise Application Integration – ERP and E-Business – ERP II – Total quality management – Future Directions – Trends in ERP.

Recommended Books

1. Alexis Leon, 'ERP DEMYSTIFIED', Tata McGraw Hill, Second Edition, **2008.**
2. Mary Sumner, 'Enterprise Resource Planning', Pearson Education, **2007**.
3. Jim Mazzullo, 'SAP R/3 for Everyone', Pearson,**2007.**
4. Jose Antonio Fernandz, 'The SAP R /3 Handbook,' Tata McGraw Hill, **1998.**
5. Biao Fu, 'SAP BW: A Step-by-Step Guide', First Edition, Pearson Education, **2003**.

PROGRAMMING IN JAVA

Subject Code: BITE1-521 **L T P C** **Duration: 42 Hrs.**
3 1 0 4

Unit-I

FUNDAMENTALS OF OBJECT–ORIENTED PROGRAMMING: Introduction; Object-Oriented Paradigm; Basic Concepts of Object-Oriented Programming Benefits of OOP; Applications of OOP. JAVA EVOLUTION: - Java History; Java Features; How Java Differs

from C and C++; Java and Internet, Java and World Wide Web, Web Browsers; Hardware and Software Requirements; Java Support Systems, Java Environment. OVERVIEW OF JAVA LANGUAGE: - Introduction; Simple Java Program; Comments in java; An application with Two Classes; Java Program Structure; Java Tokens; Java Statements; Implementing a Java Program; Java Virtual Machine; Command Line Arguments; Programming Style. CONSTANTS, VARIABLES AND DATA TYPES: - Introduction; Constants; Variables; Data Types; Variables, Constants, Standard Default Values. OPERATORS AND EXPRESSIONS: - Introduction to Operators, Expressions; Operator Precedence; Mathematical Functions. DECISION MAKING, BRANCHING AND LOOPING: - Decision making and Branching Statements, Looping Statements, Labeled loops, Jumping Statements

Unit-II

CLASSES, OBJECTS AND METHODS: Introduction; Defining a Class; Adding Variables; Adding Variables; Adding Methods; Creating Objects; Accessing Class Members; Constructors; Methods Overloading; Static Members; Nesting of Methods; Inheritance: Extending a Class; Overriding Methods; Final Variables and Methods; Final Classes; Finalizer Methods; Abstract Methods and Classes; Visibility Control. ARRAYS, STRINGS AND VECTORS: - Arrays; Zagged Arrays: Strings; String functions: Vectors; Wrapper Classes. INTERFACES: Introduction; Defining Interfaces; Extending Interfaces; Implementing Interfaces; Accessing Interface Variables, Implementing Multiple Inheritence using Interfaces. PACKAGES: Introduction; System Packages; Using System Packages; Naming Conventions; Creating Packages; Accessing a Package; Using a Package; Adding a Class to a Package; Hiding Classes.

Unit-III

MANAGING ERRORS AND EXCEPTIONS: Introduction; Types of Errors; Exceptions; Exception Handling using Try, Catch and Finally block: Throwing Our Own Exceptions; Using Exceptions for Debugging. APPLET PROGRAMMING: - Introduction; How Applets Differ from Applications; Applet Life Cycle; Creating an Executable Applet; Passing Parameters to Applets; Aligning the Display; More about HTML Tags; Displaying Numerical Values; Getting Input from the User. GRAPHICS PROGRAMMING: - Introduction; The Graphics Class; Lines and Rectangles; Circles and Ellipses; Drawing Arcs; Drawing Polygons; Line Graphs; Using Control Loops in Applets; Drawing Bar Charts.

UNIT-IV

JAVA AWT: Java AWT package Containers; Basic User Interface components; Layouts.
EVENT HANDLING: Event delegation Approach; ActionListener; AdjustmentListener, MouseListener; MouseMotionListener; WindowListener; KeyListener; ItemListener JAVA I/O HANDLING: I/O File Handling (Input Stream & Output Streams, File Input Stream & FileOutputStream, Data I/P and O/P Streams, File Class, Reader and Writer Streams, Random Access File).

Recommended Books:

1. E. Balagurusami, 'Programming in Java', 4th Edn., Tata McGraw Hill.
2. Mastering Java, 2nd Edn., BPB Publications.
3. Ivan Bayross, 'Advance Java', BPB Publications.

WEB TECHNOLOGIES

Subject Code: BITE1-522 **L T P C** **Duration: 42 Hrs.**
3 1 0 4

Course Outcomes: This course will enable the student to build web pages using HTML, DHTML, CSS and JavaScript.

Unit-I

Introduction to HTML: Information Files Creation; Web Server; Web Client/Browser (Understanding how a Browser communicates with a Web Server); Hyper Text Markup Language (HTML) (HTML Tags, Paired Tags); Commonly used HTML Commands (The structure of an HTML program, Document Head, Document Body); Titles and Footers; Text Formatting (Paragraph Breaks, Line Breaks); Emphasizing Material in a Web Page (Heading Styles, Drawing Lines); Text Styles (Bold, Italics, Underline); Other Text Effects (Centering (Text, Images etc.); Spacing (Indenting Text).Lists: Types of Lists (Unordered List (Bullets), Ordered Lists (Numbering), Definition. Adding Graphics to HTML Documents: Using the Border attribute; using the Width and Height Attribute; Using the Align Attribute; Using the ALT Attribute.

Unit-II

Tables: Introduction (Header, Data rows, The Caption Tag); Using the Width and Border Attribute; Using the Cell Padding Attribute; Using the Cell Spacing Attribute; Using the BGCOLOR Attribute; Using the COLSPAN and ROWSPAN Attributes. Linking Documents: Links (External Document References, Internal Document References); Images as Hyperlinks (Image Maps). Frames: Introduction to Frames: The <FRAMESET> tag, the <FRAME> tag, Targeting Named Frames. DHTML: Cascading style sheets, Style tag.

Unit-III

Introduction to JavaScript: JavaScript in Web Pages (Netscape and JavaScript, Database Connectivity, Client side JavaScript, Capturing User Input); The Advantages of JavaScript (An Interpreted Language, embedded within HTML, Minimal Syntax - Easy to Learn, Quick Development, designed for Simple, Small Programs, Performance, Procedural Capabilities, designed for Programming User Events, Easy Debugging and Testing, Platform Independence/Architecture Neutral); Writing JavaScript into HTML.

Unit-IV

Forms Used by a Web Site: The Form Object; The Form Object's Methods (The Text Element, The Password Element, The Button Element, The Submit (Button) Element, The Reset (Button) Element, The Checkbox Element, The Radio Element, The Text Area Element, The Select and Option Element, The Multi Choice Select Lists Element); Other Built-In Objects in JavaScript (The String Object, The Math Object, The Date Object); User Defined Objects (Creating a User Defined Object, Instances, Objects within Objects).

Recommended Books:

1. Alexis Leon, 'Internet for Every One', 1st Edn., Leon Techworld Publication, **2009**.
2. R. Greenlaw, E. Hepp, 'Fundamentals of Internet and WWW', 2nd Edn., Tata McGraw Hill, **2007.**
3. Raj Kamal, 'Internet & Web Technologies', Tata McGraw Hill Education, **2009.**
4. Bayross Ivan, 'HTML, DHTML, Javascript, PERL, CGI', 3rd Edn., BPB Publication, **2009.**
5. Chris Payne, 'Asp in 21 Days', 2nd Edn., Sams Publishing, PDCA, **2003**.

SOFTWARE ENGINEERING

Subject Code: BITE1-523 **L T P C** **Duration: 42 Hrs.**
3 1 0 4

Unit-I

Software: Characteristics, Components Applications, Software Process Models: Waterfall, Spiral, Prototyping, Fourth Generation Techniques, Concepts of Project Management, Role of Metrics and Measurement.

Unit-II

S/W Project Planning: Objectives, Decomposition Techniques: S/W Sizing, Problem Based Estimation, Process Based Estimation, Cost Estimation Models: COCOMO Model, The S/W Equation, System Analysis: Principles of Structured Analysis, Requirement Analysis, DFD, Entity Relationship Diagram, Data Dictionary. S/W Design: Objectives, Principles, Concepts, Design Methodologies: Data Design, Architecture Design, Procedural Design, Object – Oriented Concepts.

Unit-III

Testing Fundamentals: Objectives, Principles, Testability, Test Case Design: White Box & Black Box testing, Testing Strategies: Verification & Validation, Unit Testing, Integration Testing, Validation Testing, System Testing.

Unit-IV

Advanced Topics in Software Engineering: Reengineering: Reverse Engineering, Restructuring, Forward Engineering. Computer Aided Software Engineering (CASE): Taxonomy of CASE tools.

Recommended Books:

1. Roger S. Pressman, 'Software Engineering – A Practitioner's Approach', 6th Edn., McGraw Hill.
2. R.E. Fairley, 'Software Engineering Concepts', Paperback Edition, McGraw Hill.
3. Jalota, 'An Integrated Approach to Software Engineering', 3rd Edn., Narosa Publishing House.

ARTIFICIAL INTELLIGENCE

Subject Code: BITE1-562 **L T P C** **Duration: 42 Hrs.**
3 0 0 3

Unit-I

Module1: Introduction- What is intelligence? Foundations of artificial intelligence (AI). History of AI; Problem Solving- Formulating problems, problem types, states and operators, state space, search strategies.

Module2: Informed Search Strategies- Best first search, A* algorithm, heuristic functions, Iterative deepening A*(IDA), small memory A*(SMA); Game playing - Perfect decision game, imperfect decision game, evaluation function, alpha-beta pruning.

Unit-II

Module3: Reasoning-Representation, Inference, Propositional Logic, predicate logic (first order logic), logical reasoning, forward chaining, backward chaining; AI languages and tools - Lisp, Prolog, CLIPS

Module4: Planning- Basic representation of plans, partial order planning, planning in the blocks world, heirarchical planning, conditional planning, representation of resource constraints, measures, temporal constraints

Unit-III

Module5: Uncertainty - Basic probability, Bayes rule, Belief networks, Default reasoning, Fuzzy sets and fuzzy logic; Decision making- Utility theory, utility functions, Decision theoretic expert systems.

Unit-IV

Module 6: Inductive Course - decision trees, rule based Course, current-best-hypothesis search, least commitment search, neural networks, reinforcement Course, genetic algorithms; Other Course methods - neural networks, reinforcement Course, genetic algorithms.

Module7: Communication - Communication among agents, natural language processing, formal grammar, parsing, grammar

Recommended Books

1. Stuart Russell and Peter Norvig, 'Artificial Intelligence – A Modern Approach', Pearson Education Press, **2001**.
2. Kevin Knight, Elaine Rich, B. Nair, 'Artificial Intelligence', McGraw Hill, **2008**.
3. George F. Luger, 'Artificial Intelligence', Pearson Education, **2001**.
4. Nils J. Nilsson, 'Artificial Intelligence: A New Synthesis', Morgan Kauffman, **2002**.

EXPERT SYSTEMS

Subject Code: BITE1-563 **L T P C** **Duration: 42 Hrs.**
3 0 0 3

PREREQUISITIES: Data Structure and Programming, Design & Analysed Algorithm, Symbolic Logic and Logic Programming.

OBJECTIVES: The major objectives of this course is to provide students with a view of various models of expert systems, its design, Implementation methods for Knowledge extraction and representation, Fuzzy and connectionist systems.

COURSE CONTENTS:

Expert Systems, Definitions types, components, Expert System Development Process [15 %]
Knowledge Representation Techniques-Logic Frames, Semantic Nets, etc. [15 %]
Domain Exploration Knowledge elicitation. Conceptualization, bathering Formlizations Methods of Knowledge Acquisition; Interviewing Sensor Data Capturing. [20 %]
Course, Planning and Explanation in Expert System: Neural Expert System, Fuzzy Expert System, Real Time Expert Systems. [30 %]
Implementation Tools: Prolog, Expert System Shell Expersys, etc. Study of existing expert systems- TIERES, As Mycin & AM. [20 %]

RECOMMENDED BOOKS

1. Patterson, 'Introduction to AI Expert System', PHI, **1993.**
2. Jackson, 'Building Expert System', John Wiley, **1991**.

DATA WAREHOUSING & MINING

Subject Code: BITE1-564 **L T P C** **Duration: 42 Hrs.**
3 0 0 3

Unit-I

Introduction to Data Warehousing, The need for data warehousing, Operational & Informational Data Stores, Data Ware House Characteristics, Data Warehouse role & Structure, The cost of warehousing data. Introduction to OLAP & OLTP, Difference between OLAP & OLTP. OLAP Operations

Unit-II

Building a Data Warehouse, Design/Technical/Implementation Considerations, Data Preprocessing Overview. Data Summarization, Data Cleaning, Data Transformation, Concept Hierarchy, Structure. Patterns & Models, Artificial Intelligence (Overview). Multidimensional Data Model, Schemas for Multidimensional Data (Star Schema, Snowflake Schema, Fact Constellation), Data Warehouse Architecture, Data Warehouse Design, OLAP Three-tier Architecture, Indexing & Querying in OLAP, OLAM, Efficient Methods of Cube Computation, Discovery Driven Exploration of Data Cubes, Attributed-Oriented Induction. SECTION -C Association Rule Mining, Market Basket Analysis, Apriori Algorithm, Mining Multilevel Association Rules, From Association Mining to Correlation Analysis, Constraint Based Association Mining, Introduction to Classification, Classification by decision Tree, Attribute Selection Measure.

Unit-III

Introduction to Prediction techniques, Accuracy of a Classifier, Cross-Validation, Bootstrap, Boosting, Bagging, Introduction to Clustering, Classification of Various Clustering Algorithms, Selecting and Using Right DM Technique, Selecting and Using Right DM Technique, Data Visualization.

Recommended Books:

1. Alex Berson, 'Data Warehousing, Data Mining, and OLAP', 1st Edn., Tata McGraw Hill.
2. Jiawei Han & Micheline Kamber, 'Data Mining Concepts & Techniques', 2nd Edn., Morgan Kaufmann Publishers.
3. George M. Marakas, 'Modern Data Warehousing, Mining & Visualization Core Concepts', 1st Edn., Pearson Education.
4. Hawkin, 'Data Warehousing, Architecture & Implementation', Prentice Hall.
5. Rud,Olivia, 'Data Mining: Modelling Data for Marketing, Risk and Customer Relationship Management', Paperback Edition.
6. Berry, Michael, 'Data Mining Techniques', 3rd Edn.
7. Sharma, Gajendra, 'Data Mining, Data Warehousing and OLAP', 2nd Edn.
8. G.K. Gupta, 'Data Mining with Case Studies', 2nd Edn.
9. Hand, David, 'Principles of Data Mining'.

PROGRAMMING IN JAVA LAB.

Subject Code: BITE1-524 **L T P C**
0 0 2 1

Implementation of all the programs related to theory concepts studied in Programming in Java Paper.

1. Operators and Mathematical Functions.
2. Decision making, Branching and Looping Statements.
3. Classes, Objects and Methods.
4. Arrays, Strings and Vectors.
5. Interfaces.
6. Packages.
7. Exception handling.
8. Applet Programming.
9. AWT.
10. Event Handling.
11. I/O Handling.

MOBILE APPLICATION DEVELOPMENT

Subject Code: BITE1-626 **L T P C** **Duration: 42 Hrs.**
3 1 0 4

Unit-I

Introduction: Overview of Java, Basics of Android & its applications, Smartphone's future, Comparison of Android with other environments. Android Architecture: Android Stack, Android applications structure. UI Architecture: Application context, Intents, Activity life cycle, supporting multiple screen sizes.

Unit-II

User Interface Widgets: Text controls, Button controls, Toggle buttons, Images. Notification and Toast: Parameters on Intents, Pending intents, Status bar notifications, Toast notifications. Menus & Dialogs: Localization, Options menu, Context menu; Alert dialog, Custom dialog, Dialog as Activity. Lists: Using string arrays, Creating lists, Custom lists. Location and Maps: Google maps, Using GPS to find current location. Working with data storage: Shared preferences, Preferences activity, Files access, SQLite database. Animation: View animation, Draw table animation.

Unit-III

Network Communications: Web Services, HTTP Client, XML and JSON. Services: Service lifecycle, Foreground service. Publishing Your App: Preparing for publishing, Signing and preparing the graphics, publishing to the Android Market.

Unit-IV

Introducing SQLite: SQLiteOpenHelper and creating a database, Opening and closing a database Cursors and its types, Working with cursors Inserts, updates, and deletes. DATABASE CONNECTIVITY: SQLite Data Types, Content Values, Adding, Updating and Deleting Content, Content provider: introduction, Query providers.

Recommended Books

1. Onur Cinar, 'Beginning Android 4', Apress Publication.
2. Reto Meier, 'Professional Android 4 Application Development', Wrox Publication.
3. 'Beginning iOS 6 Development: Exploring the iOS SDK', David Mark, Apress Publication.

Web Resources

1. Safari Textbooks Online: http://library.ohio-state.edu/search/y?SEARCH=Safari
2. Android Developer Site: http://developer.android.com/index.html
3. Stack Overflow: http://www.stackoverflow.com

LINUX ADMINISTRATION

Subject Code: BITE1-627 **L T P C** **Duration: 42 Hrs.**
3 1 0 4

Unit-I

Introduction: Introduction to UNIX, Linux, GNU and Linux distributions Duties of the System Administrator, The Linux System Administrator, Installing and Configuring Servers, Installing and Configuring Application Software, Creating and Maintaining User Accounts, Backing Up and Restoring Files, Monitoring and Tuning Performance, Configuring a Secure System, Using Tools to Monitor Security Booting and shutting down: Boot loaders-GRUB, LILO, Bootstrapping, Init process, rc scripts, Enabling and disabling services, The File System: Understanding the File System Structure, Working with Linux Supported File

Systems, Memory and Virtual File Systems, Linux Disk Management Network Configuration Files.

Unit-II

System Configuration Files: System wide Shell Configuration Scripts, System Environmental Settings, Network Configuration Files, Managing the init Scripts, Configuration Tool, Editing Your Network Configuration TCP/IP Networking: Understanding Network Classes, Setting Up a Network Interface Card (NIC), Understanding Subnetting, Working with Gateways and Routers, Configuring Dynamic Host Configuration Protocol, Configuring the Network Using the Network, The Network File System: NFS Overview, Planning an NFS Installation, Configuring an NFS Server, Configuring an NFS Client, Using Automount Services, Examining NFS Security

Unit-III

Connecting to Microsoft Networks: Installing Samba, Configuring the Samba Server, Creating Samba Users 3, Starting the Samba Server, Connecting to a Samba Client, Connecting from a Windows PC to the Samba Server Additional Network Services: Configuring a Time Server, Providing a Caching Proxy Server, Optimizing Network Services Internet Services: Secure Services, SSH, scp, sftp Less Secure Services (Telnet ,FTP, sync,rsh ,rlogin,finger,talk and ntalk, Linux Machine as a Server, Configuring the xinetd Server, Comparing xinetd and Standalone, Configuring Linux Firewall Packages,

Domain Name System: Understanding DNS, Understanding Types of Domain Servers, Examining Server Configuration Files, Configuring a Caching DNS Server, Configuring a Secondary Master DNS Server, Configuring a Primary Master Server, Checking Configuration Configuring Mail Services: Tracing the Email Delivery Process, Mail User Agent (MUA), Introducing SMTP, Configuring Sendmail, Using the Postfix Mail Server, Serving Email with POP3 and IMAP, Maintaining Email Security Configuring FTP Services: Introducing vsftpd, Configuring vsftpd, Advanced FTP Server Configuration, Using SFTP.

Unit-IV

Configuring a Web Server: Introducing Apache, Configuring Apache, Implementing SSI, Enabling CGI, Enabling PHP, creating a Secure Server with SSL Providing Web Services: Creating Mailing Lists, Setting Up Web-Based Email, configuring an RSS Feed, Adding Search Functionality.

Optimizing Internet Services: Optimizing LDAP Services, Optimizing DNS Services, Optimizing Mail Services, Optimizing FTP Services, Optimizing Web Services System Administration: updating system, upgrading and customizing kernel, Administering Users and Groups Installing and Upgrading Software Packages.

Recommended Books

1. Neil Mathew, 'Beginning Linux', 4th Edn.
2. Terry Collings, 'Red Hat Linux Networking and System Administration'.
3. S. Das, 'UNIX: Concepts and Techniques', Tata McGraw Hill.
4. Linux Administration: A Beginner's Guide, Fifth Edition, Wale Soyinka, Tata McGraw-Hill
5. Richard Petersen, 'Linux: Complete Reference', 6th Edn., Tata McGraw Hill.

CLOUD COMPUTING

Subject Code: BITE1-665 **L T P C** **Duration: 40 Hrs.**
3 0 0 3

Overview of Cloud Computing: What is a cloud, Definition of cloud, Definition of cloud, characteristics of cloud, why use clouds, how clouds are changing, how clouds are changing,

driving factors towards cloud, Comparing grid with cloud and other computing systems, workload patterns for the cloud, "Big Data", IT as a service.

Cloud Computing Concepts: Concepts of cloud computing, Cloud computing leverages the Internet, Positioning cloud to a grid infrastructure, Elasticity and scalability, Virtualization, Characteristics of virtualization, Benefits of virtualization, Virtualization in cloud computing, Hypervisors, Multitenancy, Types of tenancy, Application programming interfaces (API), Billing and metering of services , Economies of scale, Management, tooling, and automation in cloud computing, Management: Desktops in the Cloud, Security.

Cloud Service Delivery: Cloud service , Cloud service model architectures, Infrastructure as a service (IaaS) architecture, Infrastructure as a service (IaaS) details, Platform as a service (PaaS) architecture, Platform as a service (PaaS) details, Platform as a service (PaaS) , Examples of PaaS software, Software as a service (SaaS) architecture, Software as a service (SaaS) details, Examples of SaaS applications, Trade-off in cost to install versus , Common cloud management platform reference architecture: Architecture overview diagram, Common cloud management platform.

Cloud Deployment Scenarios: Cloud deployment models, Public clouds, Hybrid clouds, Community, Virtual private clouds, Vertical and special purpose, Migration paths for cloud, Selection criteria for cloud deployment.

Security in Cloud Computing: Cloud security reference model, How security gets integrated , Cloud security , Understanding security risks, Principal security dangers to cloud computing, Virtualization and multitenancy, Internal security breaches, Data corruption or loss, User account and service hijacking, Steps to reduce cloud security breaches, Steps to reduce cloud security breaches, Reducing cloud security, Identity management: Detection and forensics, Identity management: Detection and Identity management, Benefits of identity, Encryption techniques, Encryption & Encrypting data , Symmetric key encryption, Asymmetric key encryption, Digital signature, What is SSL?

IBM Smart Cloud, Amazon Web Services, Google Cloud platform, Windows Azure platform, A comparison of Cloud Computing Platforms, Common building Blocks.

Recommended Books

1. Raj Kumar Buyya, James Broberg, Andrezei M.Goscinski, 'Cloud Computing: Principles and Paradigms', **2011**.
2. Michael Miller, 'Cloud Computing', **2008**.
3. Judith Hurwitz, Robin Bllor, Marcia Kaufman, Fern Halper, 'Cloud Computing for Dummies', **2009**.
4. Anthony T. Velte, Toby J. Velte and Robert Elsenpeter, 'Cloud Computing: A Practical Approach', McGraw Hill, **2010**.
5. Barrie Sosinsky, 'Cloud Computing Bible', Wiley, **2011**.
6. Borko Furht, Armando Escalante (Editors), 'Handbook of Cloud Computing', Springer, **2010**.

NETWORK SECURITY

Subject Code: BITE1-666 **L T P C** **Duration: 40 Hrs.**
3 0 0 3

Introduction: Overview of computer networks, seven-layer architecture, TCP/IP suite of protocols, etc. MAC protocols for high-speed LANS, MANS and wireless LANs. (For Example, FDDI, DQDB, HIPPI, Gigabit Ethernet, Wireless Ethernet, etc.)

Fast access technologies (For Example, ADSL, Cable Modem, etc. Ipv6: Basic Protocol, extensions and options, support for QoS, security, etc., neighbour discovery,

autoconfiguration, routing. Changes to other protocols. Application Programming Interface for IPV6.
Mobility in networks. Mobile IP, Security related issues.
IP Multicasting, Multicast routing protocols, address assignments, session discovery, etc.
TCP extension for high-speed networks, transaction-oriented applications. Other new options in TCP.
Network security at various layers. Secure- HTTP, SSL, ESP, Authentication header, key distribution protocols. Digital signatures, digital certificates.

Recommended Books

1. W.R. Stevens, 'TCP/IP Illustrated: The Protocols', Vol. 1, Addison Wesley, **1994**.
2. R. Wright, 'TCP/IP Illustrated: The Implementation', Vol. 2, Addison Wesley, **1995**.
3. W.R. Stevens, 'TCP/IP Illustrated: TCP for Transactions, HTTP, NNTP and the unix domain protocols', Vol. 3, Addison Wesley, **1996**.

SOFTWARE TESTING AND QUALITY ASSURANCE

Subject Code: BITE1-667 **L T P C** **Duration: 40 Hrs.**
3 0 0 3

Course Objectives: This course offers a good understanding of the concepts, methods and techniques of software testing and quality assurance and prepares students to be in a position to develop error free and quality software.

Introduction: Overview of Software Engineering, Software Process, Process Models, Overview of Project Management Process and its Phases.

Software Quality Assurance Concepts and Standards: Quality Concepts, Quality Control, Quality Assurance, SQA Activities, Software Reviews, Formal Technical Reviews, Review Guidelines, Software Reliability, Software Safety, Quality Assurance Standards, ISO 9000, ISO 9001:2000, ISO 9126 Quality Factors, CMM, TQM, Six Sigma, SPICE, Software Quality Assurance Metrics.

Risk Management and Change Management: Software Risks, Risk Identification, Risk Projection, Risk Refinement, The RMMM Plan, Software Configuration Management, Baselines, Software Configuration Items, SCM Process: Version Control, Change Control, Configuration Audit, Configuration Management for Web Engineering.

Software Testing: Testing, Verification and Validation, Test Strategies for Conventional and Object Oriented Software, Unit Testing, Integration Testing, Validation Testing, Alpha and Beta Testing, System Testing, Recovery Testing, Security Testing, Stress Testing, Performance Testing, Metrics for Source Code, Metrics for Testing, Debugging Process, Debugging Strategies.

Testing Techniques: Software Testing Fundamentals, Black Box and White Box Testing, Basis Path Testing, Flow Graph Notation, Independent Program Paths, Graph Matrices, Control Structure Testing, Condition Testing, Data Flow Testing, Loop Testing, Graph Based Testing Methods, Equivalence Partitioning, Boundary Value Analysis.

Object Oriented Testing Methods: Applicability of Conventional Test Case Design Methods, Issues in Object Oriented Testing, Fault-Based Testing, Scenario-Based Testing, Random Testing and Partition Testing for Classes, InterClass Test Case Design.

Testing Process and Specialized Systems Testing: Test Plan Development, Requirement Phase, Design Phase and Program Phase Testing, Testing Client/Server Systems, Testing Web based Systems, Testing Offthe-Shelf Software, testing in Multiplatform Environment, testing for Real Time Systems, Testing Security.

Case Studies: Design test cases for: ERP, Traffic controller, University Management system etc.

Recommended Books

1. Ian Sommerville, 'Software Engineering', 7th Edn., Pearson Education.
2. R.S. Pressman, 'Software Engineering: A Practitioner's Approach', 6th Edn., Tata McGraw Hill.
3. William E. Perry, 'Effective Methods for Software Testing', 2nd Edn., John Wiley & Sons.
4. Paul C. Jorgensen, 'Software Testing: A Craftsman's Approach', 3rd Edn., Auerbach Publications, Taylor and Francis Group, **2010**.
5. Yogesh Singh, 'Software Testing', Cambridge University Press.

MODELLING AND SIMULATION

Subject Code: BITE1-668 **L T P C** **Duration: 40 Hrs.**
3 0 0 3

Course Objectives: This course should provide the students with good understanding of various techniques of Simulation.

Introduction: What is modelling and simulation? Application areas, definition and types of system, model and simulation, introduction to discrete-event qand continuous simulation.

Simulation Methods: Discrete-event Simulation, Time advance Mechanisms, Components and organization of Discrete-event simulation, Flowchart of next-event time advance approach, Continuous Simulation, Monte Carlo Simulation.

Queueing Models: Single server queueing system, introduction to arrival and departure time, flowcharts for arrival and departure routine. Event graphs of queueing model. Determining the events and variables, Event graphs for inventory model.

Random Numbers: Introduction to Random Numbers, Importance of Random Numbers in Simulation, Mid-Square random number generator, Residue method, Arithmetic Congruential generator, Testing Numbers for Randomness, Chi-Square Test.

Distribution Functions: Stochastic activities, Discrete probability functions, Cumulative distribution function, Continuous probability functions. Generation of random numbers following binomial distribution, poisson distribution, continuous distribution, normal distribution, exponential distribution, uniform distribution.

Simulation Languages: Basic Introduction to Special Simulation Languages: GPSS/ MATLAB/ Network Simulators.

Recommended Books:

1. Averil M. Law and W. David Kelton, 'Simulation Modeling and Analysis', Tata McGraw Hill.
2. Jeoferry Gordan, 'System Simulation', Prentice Hall of India.
3. D.S. Hira, 'System Simulation', S. Chand Publication.
4. Stephen J. Chapman, 'MATLAB Programming for Engineers', Thomson Course Inc.
5. Jerry Banks, John S. Carson, Barry L. Nelson and David M. Nicol, 'Discrete-Event System Simulation', Prentice Hall of India.
6. Rudra Pratap, 'Getting Started with MATLAB 7', Oxford University Press.

CYBER LAWS AND IPR

Subject Code: BITE1-669 **L T P C** **Duration: 40 Hrs.**
3 0 0 3

Basics of Computer & Internet Technology
Internet, ISP & domain name; Network Security; Encryption Techniques and Algorithms; Digital Signatures

Introduction to Cyber World
Introduction to Cyberspace and Cyber Law; Different Components of cyber Laws; Cyber Law and Netizens.

E-Commerce
Introduction to E-Commerce; Different E-Commerce Models; E-Commerce Trends and Prospects; E-Commerce and Taxation; Legal Aspects of E-Commerce.

Intellectual Property Rights
IPR Regime in the Digital Society; Copyright and Patents; International Treaties and Conventions; Business Software Patents; Domain Name Disputes and Resolution.

IT ACT 2000
Aims and Objectives; Overview of the Act; Jurisdiction; Role of Certifying Authority; Regulators under IT Act; Cyber Crimes-Offences and Contraventions; Grey Areas of IT Act.

Suggested Readings/Books
1. Nandan Kamath, 'A Guide to Cyber Laws & IT Act 2000 with Rules & Notification'.
2. Keith Merill & Deepti Chopra (IK Inter.), 'Cyber Cops, Cyber Criminals & Internet'.
3. Diane Row Land, 'Information Technology Law'.
4. Vakul Sharma, 'Handbook of Cyber Laws', Mc Millian.

SOFTWARE PROJECT MANAGEMENT

Subject Code: BITE1-670 **L T P C** **Duration: 40 Hrs.**
3 0 0 3

Course Objectives-Software development is a complex process involving such activities as domain analysis, requirements specification, communication with the customers and end-users, designing and producing different artifacts, adopting new paradigms and technologies, evaluating and testing software products, installing and maintaining the application at the end-user's site, providing customer support, organizing end-user's training, envisioning potential upgrades and negotiating about them with the customers, and many more. The proposed subject will take students through the various processes involved in project management.

Pre-requisite Knowledge- The basic understanding of concepts of Software engineering, computer networks and Database concepts.

Unit-1

Project Management Fundamentals- Basic Definitions, Project Stakeholders and Organizational, Influences on Project Management, Project Management Processes, Project Initiating Processes

Unit-2

Planning and Resourcing a Project - Identifying Requirements, Creating the Work Breakdown structure, Developing the Project Schedule, developing a Project Cost Estimate, Planning Quality, Organizing the Project Team, Planning for Potential Risks

Unit-3

Executing and Managing a Project - Project Executing Processes- Acquiring and Developing the Project Team, Managing the Project Team, Managing Stakeholder Expectations, Directing and Managing the Project while assuring Quality

Unit-4

Project Monitoring and Controlling Processes - Verifying and Controlling Scope, Managing Schedule and Cost, Controlling Quality, Monitoring and Controlling Risks.
Integrated Change Control, Project Closing Process - Closing a Project

Recommended Books:

1. Software Engineering - Somerville (Addison Wesley).
2. Software Engineering-Pressmen. Suggested Tools – Rational Team Concert, MS Project.

MOBILE APPLICATION DEVELOPMENT LAB.

Subject Code: BITE1-629 **L T P C**
0 0 2 1

Implementation of all the programs related to theory concepts studied in Mobile Application Development. Practical will be based on the syllabus of theory paper of Practical lab Android Programming, Installing the SDK, Creating Android Emulator, Installing Eclipse Installing Android Development Tools, Supporting multiple screen sizes, Alert dialog, Custom dialog, Dialog as Activity, Using string arrays, Creating lists , Custom lists.
Database SQLite Programming

1. SQLiteOpenHelper
2. SQL API, spinner, List view
3. SQLiteDatabse
4. Cursor
5. Reading and updating Contacts
6. Reading bookmarks

Example: Develop an App to demonstrate database usage. CRUD operations must be implemented.