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EIILM University

Directorate OF DISTANCE LEARNING

SYLLABUS BOOKLET
Semester-I TO VI

BACHELOR OF COMPUTER ApplicATIONs PROGRAM

JAN 2010 ONWARDS

SYLLABUS
BACHELOR OF COMPUTER APPLICATIONS

SCHEME OF EXAMINATIONS
BACHELOR OF COMPUTER APPLICATIONS PROGRAMME

FIRST SEMESTER EXAMINATION

CODE NO.	PAPER	L	T/P	CREDITS
BCA – 101	ICIS	3		3
BCA – 102	COMPUTER FUNDAMENTAL AND PROGRAMMING	3		3
BCA – 103	MATHEMATICS-I	3		3
BCA – 104	BUSINESS PRACTICES	3		3
BCA – 105	COMPUTER PROGRAMMING "C LANGUAGE"	3		3
BCA – 106	PERSONALITY DEVELOPMENT & COMMUNICATION SKILLS-I	3		3
BCA – 107	PRACTICAL LAB-I		4	4
	TOTAL	18	4	**22**

SYLLABUS
BACHELOR OF COMPUTER APPLICATIONS
EIILM University

SEMESTER – I

INTRODUCTION TO COMPUTERS AND INFORMATION SYSTEM

Sub. Code: BCA - 101 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

Unit I

Basics of Computer and it's evolution
Evolution of computer, Data, Instruction and Information, Characteristics of computers, Various fields of application of computers, Various fields of computer (Hardware, Software, Human ware and Firmware), Advantages and Limitations of computer, Block diagram of computer, Function of different units of computer, Classification of computers - Micro, Mini, mainframe and Super, Types of software (System and Application),

Data Representation:
Different Number System (Decimal, Binary, Octal and hexadecimal) and their inter conversion (Fixed Point Only), Binary Arithmetic (Addition, Subtraction, Multiplication and Division)

Unit II

Input and Output Devices:
Keyboard, Mouse, Joystick, Digitizer, Scanner, MICR, OCR, OMR, Light Pen, Touch Screen, Bar Code Reader, Voice Input Device, Monitor and it's type (VGA, SVGA and XGA), Printer and it's type (Impact and Non-Impact with example), Plotter

Computer Memory:
Primary Memory (ROM and it's type – PROM, EPROM, RAM) Magnetic Disks – Floppy disks, Hard disks, Magnetic Tape, Optical disks – CD ROM and Cache Memory

Unit III

Operating System Concept:
Introduction to operating system; Function of OS, Types of operating systems, Booting Procedure, Start-up sequence, Details of basic system configuration, Important terms like Directory, File, Volume, Label, Drive name, etc.

Introduction to GUI using Windows Operating System:
All Directory Manipulation: Creating directory, Sub directory, Renaming, Coping and Deleting the directory File Manipulation: Creating a file, deleting, coping, renaming a file

Unit IV

Concept of Data Communication and Networking:
Networking Concepts, Types of networking (LAN,MAN AND WAN), Communication Media, Mode of Transmission (Simplex, Half Duplex, Full Duplex), Analog and Digital Transmission. Synchronous and Asynchronous Transmission, Different Topologies.

Text Books:
1.Leon and Leon; *Introduction to Information Technology,* Leon Tech World.
1.Sinha, Kr. Pradeep and Preeti Sinha; *Foundations of Computing*, BPB Publication.
2. Jain, V.K.; *Computers and Beginners*

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – I

COMPUTER FUNDAMENTAL AND PROGRAMMING

Sub. Code: BCA – 102 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Assembler: Overview of the assembly process Design of two pass assembler Single pass assembler Macros Macro definition and usage schematics for macro expansion Design of a Macro pre- processor Design of a Macro assembler Introduction to Loaders-&-Linkers.

UNIT 2

Compiler: Introduction Analysis of the source program phases of a compiler Compiler construction tools Lexical analysis Role of the lexical analyser Specification of tokens , Recognition of tokens Lexical analyser generators.

Syntax Analysis Role of the parser Context free grammars Top-down parsing Bottom-up parsing Operator precedence parsing LR parsers (SLR, Canonical LR, LALR),Parser-generators.

UNIT 3

Algorithm development, Techniques of problem solving, Flow-charting, Step-wise refinement, Algorithms for searching, sorting (exchange and insertion), merging of ordered lists.

UNIT 4

Representation of integers, characters, real Data types : constants and variables; Arithmetic Expressions, Assignment statement, Logical expression, Sequencing, Alteration and iteration; ring processing; Sub programs, Recursion, Files and pointers; Structured programming concepts; Top down Design, Development of efficient program; Program correctness; Debugging and testing of Programs.

Text Book:

1) Alfred V. Aho, Ravi Sethi & Jeffrey. D. Ullman, Compilers Principles, Techniques & Tools.

References:

1) Aho. A.V & Ullman J.D Principles of Compiler Design .
2) S.S. Muchnick Harcourt Asra (Morgan Kaufman),Advanced Compiler Design implementation, 1997
3) Modern Compiler Implementation in C , Cambridge Uty. Press 1997.
4) Alan Holub, Compiler Design in C, PHI
5) Kenneth C. Louden, Compiler Construction, Principle and Practice, Thomson Books
6) Leland L.Beck, "System Software An Introuction to System Programming", Addison Wesely
7) D.M.Dhamdhere, "System Programming and Operating Systems", 2ond Ed., Tata Mcgrawhill

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SEMESTER – I

MATHS - I

Sub. Code: BCA - 103 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Trigonometry
System of measuring angles, Trigonometric functions, identities and signs, values of t-ratio for T-ratios of allied angles, Addition and substraction formulae, transformation of products into sum or difference of t-ratios, transformation of sum or difference into product of t-ratios, Trigonometric equations and graphs, inverse trigonometric functions.

UNIT 2

Differentiation
Elementary results on limits and continuity (without proof). Derivative of functions, differentiation of implicit functions and parametric forms.

UNIT 3

Co-ordinate Geometry
Distance formulae, section formulae, Slope of non-vertical line, equation of line in slope intercept form, normal form, distance of a point from a line, angle between two lines.

UNIT 4

Quadratic Equations
Solution of Quadratic Equations by factor method, complete square method, and Discriminant method, Relation of the roots.

Complex Numbers
Definition, Representation of Complex Numbers, Argand plane, Sum, subtraction, product and division of complex numbers, Magnitude, argument and square root of complex-numbers.

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SEMESTER – I

BUSINESS PRACTICES

Sub. Code: BCA - 104 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Introduction to Modern Business:

What are management function, planning, organization, directing and control.

UNIT 2

Introduction to Organization Behavior:

Individual in an organization, Group in an Organization, Organization as a system.

UNIT 3

Introduction to Human Resource management.

Human resource Planning-Job analysis, Recruitment and training compensation management-Payroll and incentives. Human Resource information system. Computer based employee information system. Software package to be used for building an information system for employees, training, recruitment & job analysis A payroll package to be used.

UNIT 4

Introduction to Decision Analysis
Decision analysis: Investment analysis, annuity analysis, compounding analysis, Inventory. Theory-EQQ, JIT, Production Scheduling PERT and CPM.

BACHELOR OF COMPUTER ADMINISTRATION
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SEMESTER – I

COMPUTER PROGRAMMING "C LANGUAGE"

Sub. Code: BCA - 105 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

1.0 Introduction to 'C' Language
1.1 History
1.2 Structures of 'C' Programming
1.3 Function as building blocks

2.0 Language Fundamentals
2.1 Character set
2.2 C Tokens
2.3 Keywords
2.4 Identifiers
2.5 Variables
2.6 Constant
2.7 Data Types
2.8 Comments

UNIT 2

3.0 Operators
3.1 Types of operators
3.2 Precedence and Associativity
3.3 Expression
3.4 Statement and types of statements

4.0 Built-in Operators and function
4.1 Console based I/O and related built-in I/O function
4.1.1 printf( )
4.1.2 scanf( )
4.1.3 getch( )
4.1.4 getchar( )
4.1.5 putchar( )
4.2 Concept of header files
4.3 Preprocessor directives :

4.3.1 #include
4.3.2 #define

UNIT 3

5.0 Control structures
5.1 Decision making structures :
5.1.1 If
5.1.2 If-else
5.1.3 Nested If -else
5.1.4 Switch.
5.2 Loop Control structures :
5.2.1 While
5.2.2 Do-while,
5.2.3 for, Nested for loop
5.3 Other statements :
5.3.1 break
5.3.2 continue
5.3.3 goto
5.3.4 exit

6.0 **Introduction to problem solving**
6.1 Concept : problem solving
6.2 Problem solving techniques (Trial & Error, Brain storming, Divide & Conquer)
6.3 Steps in problem solving (Define Problem, Analyze Problem, Explore Solution)
6.4 Algorithms and Flowcharts (Definitions, Symbols)
6.5 Characteristics of an algorithm
6.6 Conditionals in pseudo-code
6.7 Loops in pseudo code
6.8 Time complexity: Big-Oh notation, efficiency
6.9 Simple Examples: Algorithms and flowcharts (Real Life Examples)

UNIT 4

7.0 Simple Arithmetic Problems
7.1 Addition / Multiplication of integers
7.2 Determining if a number is +ve / -ve / even / odd
7.3 Maximum of 2 numbers, 3 numbers
7.4 Sum of first n numbers, given n numbers
7.5 Integer division, Digit reversing, Table generation for n,
7.6 Prime number, Factors of a number 15
7.7 Other problems such as Perfect number, GCD of 2 numbers etc

8.0 Functions
8.1 Basic types of function
8.2 Declaration and definition
8.3 Function call
8.4 Types of function

8.5 Parameter passing
8.5.1 Call by value
8.5.2 Call by reference
8.6 Scope of variables
8.7 Storage classes
8.8 Recursion.

Referential Books:-

1. Let us C-Yashwant Kanetkar.
2. Programming in C- Balguruswamy
3. The C programming Lang., Pearson Ecl – Dennis Ritchie
4. Structured programming approach using C-Forouzah &Ceilberg Thomson learning publication.
5. Pointers in C – Yashwant Kanetkar
6. How to solve it by Computer – R. G. Dromy
7. Introduction to algorithms – Cormen, Leiserson, Rivest, Stein

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SEMESTER – I

PERSONALITY DEVELOPMENT & COMMUNICATION SKILLS -I

Sub. Code: BCA - 106 **Credits: 04**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

Unit-I

Practical grammar basic fundamental of grammar and usage, how to improve command over spoken and written English with stress o Noun, Verb Tense and Adjective. Sentence errors, Punctuation, Vocabulary building to encourage the individual to communicate effective and diplomatically, common errors in business writing.

Unit-II

Introduction to Business Communication: Basic forms of communication, Process of communication, Principles of effective Business Communication, 7 Cs. Media of Communication: Types of communication: Barriers of communication
(Practical exercise in communication)

Unit-III

Business letter writing: Need, Functions and Kinds. Layout of letter writing. Types of letter writing: Persuasive letters, Request letters, Sales letters, Complaints and Adjustments.

Departmental Communication: Meaning, Need and types: Interview letters, Promotion Letters, resignation letters, news letters, Circulars, Agenda, Notice, Office memorandums, Office orders, Press release.

Unit-IV

Aids to correct Business writing, Practical Grammar (basic Fundamentals), Sentence errors-Punctuation, Vocabulary building.

Business Etiquettes
Business manners. Body language gestures, Etiquette of the written word, Etiquette of the telephone, Handling business meetings. Role play on selected topics with case analysis and real life experiences.

Text Books:

1.Wren & Mertin; *English grammar and composition*, 2003.
2.Sinha, K. K.; *Business Communication,* Galgotia Publishers, 2003.
3.Robinson, David; *Business Etiquette,* Kogan Page.
4.Rogets Thesaurus.

Reference Books:

1.Hand Book of Practical Comunication Skills-Chrissie Wrought,published by Jaico Publishing House.
2. Ray, Reuben; *Communication today – Understanding Creative Skills,* Himalaya Publishing House, 2001.

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SEMESTER – I

PRACTICAL – 1

Sub. Code: BCA - 107 **Credits: 04**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

SECOND SEMESTER EXAMINATION

CODE NO.	PAPER	L	T/P	CREDITS
BCA – 201	OBJECT ORIENTED PROGRAMMING USING C++	3		3
BCA – 202	BASICS OF SOFTWARE & ESTIMATION TECHNIQUE	3		3
BCA – 203	DIGITAL ELECTRONICS	3		3
BCA – 204	SYSTEM PROGRAMMING	3		3
BCA – 205	PERSONALITY DEVELOPMENT & COMMUNICATION SKILLS-II	3		3
BCA – 206	ORGANIZATIONAL BEHAVIOR	3		3
BCA – 207	PRACTICAL LAB-II		4	4
	TOTAL	18	4	**22**

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
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SEMESTER – II

OBJECT ORIENTED PROGRAMMING USING C++

Sub. Code: BCA - 201 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

Unit-I

Introduction to object oriented programming, user defined types, polymorphism, and encapsulation. Getting started with C++ - syntax, data-type, variables, strings, functions, exceptions and statements, namespaces and exceptions, operators, Flow control, functions, recursion. Arrays and pointers, structures.

Unit-II

Abstracting Mechanisms : Classes, private, public, constructors, destructors, member functions, static members, references etc. Class hierarchy derived classes. Inheritance : simple inheritance, polymorphism, object slicing, base intialization, virtual functions.

Unit-III

Prototypes, linkages, operator overloading, ambiguity, friends, member operators, operator function, I/O Operators etc. Memory management : new, delete, object copying, copy constructors, assignment operator, this input/output. Exception handling : Exceptions and derived classes, function exception declarations, Unexpected exceptions, Exceptions when handling exceptions, resource capture and release etc.

Unit-IV

Templates and Standard Template library : template classes, declaration, template functions, namespaces, string, iterators, hashes, iostreams and other type. Design using C++ design and development, design and programming. role of classes.

Suggested Books :

1. Herbert Schildts : C++ - The Complete Reference, Tata McGraw Hill Publications.
2. Balaguru Swamy : C++, Tata McGraw Hill Publications.

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SEMESTER – II

BASICS OF SOFTWARE & ESTIMATION TECHNIQUES

Sub. Code: BCA - 202 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

The Evolving Role of Software Introduction to Software Engineering, Software, Software Process models.
System Concepts: Characteristics, classification, Information systems, system development Methodologies
System Development Life Cycle (SDLC): Planning, analysis, design, implementation, system operation and support Software Characteristics, Software Applications Software: A Crisis on the Horizon Software Myth.

UNIT 2

Software Engineering: A Layered Technology, Process, Methods, and Tools, A Generic View of, Software Engineering, The Software Process, Software Process Models, The Linear Sequential Model, The Prototyping Model, The RAD Model, Evolutionary Software Process Models, The Incremental Model, The Spiral Model, The WINWIN Spiral Model, The Concurrent Development Model, Component-Based Development, The Formal Methods Model, Fourth Generation Techniques, Process Technology, Product and Process.

UNIT 3

Measures, Metrics, and Indicators, Metrics in the Process and Project Domains, Process Metrics and Software Process Improvement, Project Metrics, Software Measurement, Size-Oriented Metrics, Function-Oriented Metrics, Extended Function Point Metrics, Reconciling Different Metrics Approaches, Metrics for Software Quality, An Overview of Factors That Affect Quality, Measuring Quality, Defect Removal Efficiency, Integrating Metrics Within the Software Engineering Process, Arguments for Software Metrics, Establishing a Baseline, Metrics Collection, Computation, and Evaluation, Managing Variation: Statistical Quality Control, Metrics for Small Organizations, Establishing a Software Metrics Program

UNIT 4

Observations on Estimating, Project Planning Objectives, Software Scope, Obtaining Information, Necessary for Scope, Feasibility, A Scoping Example, Resources, Human Resource, Reusable, Software Resources, Environmental Resources, Software Project Estimation, Decomposition Techniques, Software Sizing, Problem-Based Estimation, An Example of LOC-Based Estimation, An Example of FP-Based Estimation, Process-Based Estimation, An Example of Process-Based Estimation, Empirical Estimation Models, The Structure of Estimation Models, The COCOMO Model, The Software Equation, The Make/Buy Decision, Creating a Decision Tree, Outsourcing, Auto Estimation Tool

REFERENCE BOOKS:

1. **Shari Pfleeger**; Software Engineering: The Production of Quality Software, 2nd Edition, Macmillan, 1991
2. **Roger Pressman**; Software Engineering: A Practitioner's Approach by, 4th Edition, McGraw-Hill, 1996
3. **Andrew Sage and James D. Palmer**; Software Systems Engineering
4. **Ghezzi, Jayazeri and Mandrioli**; Fundamentals of Software Engineering, Prentice-Hall, 1991
5. **Valdis Berzins and Luqi**; Software Engineering with Abstractions, Addison Wesley, 1991
6. **Ian Sommerville**; Software Engineering, Addison-Wesley
7. **Barbara Mynatt**; Software Engineering with Student Project Guidance
8. **Roger Jones**; Software Engineering
9. **David Alex Lamb**; Software Engineering: Planning for Change, Prentice-Hall, 1988
10. **N. D. Birrell and M.A. Ould**; A Practical Handbook for Software Development, Cambridge University Press, 1985/88

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SEMESTER – II

DIGITAL ELECTRONICS

Sub. Code: BCA - 203 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT-I

Boolean Algebra
Basics Laws of Boolean Algebra, Logic Gates, Simplifications of Boolean equations using K-maps, Code Conversion, (Binary, Octal, Hexadecimal), Overview of Gray codes and Excess – 3 codes.

UNIT-II

Arithmetic Circuits
Adder, Subtractor, Parallel binary adder/Subtractor, binary multiplier and divider.

Combinational Circuits
Multiplexers, De-Multiplexers, decoders, encoders, Design of code converters.

UNIT-III

Flip-flops
S-R, D, J-K, T, Clocked Flip-flop, Race around condition, Master slave Flip-Flop, Realisation of one flip-flop using other flip-flop.

Shift Registers
Serial-in-serial-out, serial-in-parallel-out, parallel-in-serial-out and parallel-in-parallel-out, Bi-directional shift register.

UNIT-IV

Counters
Ripple counter, Synchronous Counter, Modulo Counters, Ring Counter, Twisted Ring Counter. Memory Devices **-** RAM, ROM, PAL & PLA **[**

TEXT BOOKS

1. Moris Mano, “Digital Logic and Computer Design”, PHI Publications, 2002
2. R. P. Jain, “Modern Digital Electronics”, TMH, 3rd Edition, 2003.

REFERENCES:

1. R.L.Tokheim, “Digital Electronics, Principles and Applications”, Tata McGraw Hill, 1999.
2. W.Gothman, “Digital electronics”, PHI.
3. S. Salivahanan & S. Arivyhgan. “Digital circuits and design”, Vikas Publication, 2001
4. Malvino Leach, "Digital Principles and Application", TMH, 1999.

SYLLABUS
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SEMESTER – II

SYSTEM PROGRAMMING

Sub. Code: BCA - 204 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT-1

Introduction to Systems Programming, Introduction to Assembly Language Programming. Background - System software machine architecture - The simplified instructional computer – Traditional machines - RISC machines. Introduction to Instruction Formats, Data formats - Role of Base Register, Index Register. Assemblers - Basic Assembler functions - Machine dependent and machine independent - Assembler features - Assembler design - Assembler design options – Implementation examples – AIX Assembler

UNIT-2

Loaders and linkers - Basic loader functions - Machine dependent features – relocation and program linking. Machine independent features - automatic library search , loader features - Loader design options – Linkage editors, Dynamic linking, Boot strap loaders and Implementation examples- MS-DOS Linker, Sun OS linker

UNIT-3

Macro Processors - Basic macro processor functions - Machine-independent macro processor features– Macro processor Algorithm and Data structures, Conditional Macro expansion, Recursive Macro expansion, General purpose macro processors . implementation examples- MASM Macro processor, ANSI C Macro language. Introduction to Software Tools, Text editors, Interpreters, Program Generators, Debug Monitors.

UNIT-4

Basics of Compilers: Basic compiler functions, different phases of compilers (Introduction only), Interpreters, P- code compilers. Introduction to Operating systems -

Basic principles – Batch processing - Multiprogramming – Timesharing systems and real-time systems - Parallel and distributed systems - Computer system structure – Computer system operation - I/O structure - structure - Storage Hierarchy - Hardware protection-General system architecture – Case Study: General Overview of the UNIX Operating System

Text books

1. Beck L.L., System Software - An introduction to Systems Programming, Addison Wesley (First 3
Modules)
2. Silberschatz, Galvin, Operating system (5th edition), Addison Wesley (4th Module)
3. Aho, Revi sethi, Compilers Principles, techniques & Toolss , Pearson edn. (4th module)

Reference books

1. Dhamdhere D.M., Systems Programminmg & Operating Systems, Tata McGraw Hill
2. Bach M.J., The Design of the Unix Operating System, Prentice Hall India (module IV)
3. Godbole S., Operating Systems, Tata McGraw Hill

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
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SEMESTER – II

PERSONALITY DEVELOPMENT & COMMUNICATION SKILLS-II

Sub. Code: BCA - 205 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

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Course Contents:

UNIT 1

Project and report writing, and proposals – how to write an effective report, basics of project writing, paragraph writing, paper reading and voice modulation, basics of project presentation.

UNIT 2

How to make a presentation, the various presentation tools, along with guidelines of effective presentation, boredom factors in presentation and how to overcome them, interactive presentation & presentation as part of a job interview, art of effective listening.

UNIT 3
Resume writing skills, guidelines for a good resume, how to face an interview board, proper body posture, importance of gestures and steps to succeed in interviews. Practice mock interview in classrooms with presentations on self. Self introduction – highlighting positive and negative traits and dealing with people with face to face.

UNIT 4
Leadership – quality of a leader, leadership quiz with case study, knowing your skills and abilities. Introduction to group discussion techniques with debate and extempore, increase your professionalism. Audio Video recording and dialogue sessions on current topics, Economy, education system, environment, politics.

Text Books:
1. Essentials of Business Communication by Rajendra Paul,Sultan Chand & Sons Publisher.
2. Business Communication by D.D.Sehgal,V.K.Mittal and N.C.Garg,Ramesh Book Depot.

3. Reuben, Ray; *Communication today – understanding creating skills,* Himalaya Publishing House, 2001.

Reference Books:

1. E. H. McGraw, S. J.; *Basic Managerial Skills for All.* Fourth Edition, Prentice Hall of India Pvt. Ltd., New Delhi.
2. Stephen R. Covey; *The seven habits of highly effective people.*
3. Rogets Thesaurus

SYLLABUS
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SEMESTER – II

ORGANIZATIONAL BEHAVIOUR

Sub. Code: BCA - 206 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Introduction: Concept and nature of Organizational behavior; Contributing disciplines to the field of O.B.; O.B. Models; Need to understand human behavior; Challenges and Opportunities'. Role of Organisation Behaviour in today's business organisations

MOTIVATION
Primary and secondary motives; Theories of motivation: Content and process-theories - V room's expectancy theory; Porter-Lawler model; Equity theory of work motivation; Alderfers ERG theory; Mc Clelland's Need theory

UNIT 2

UNDERSTANDING SELF
Perception: Nature and Importance; Perceptual selectivity; Social Perception; Personality: Meaning; Personality determinates; Personality characteristics; Personality development theories

Individual & Interpersonal Behaviour: Biographical Characteristics; Ability; Values; Attitudes-Formation, Theories, Organisation related attitude, Relationship between attitude and behavior; Personality – determinants and traits; Emotions; Learning-Theories and reinforcement schedules, Perception –Process and errors. Interpersonal Behaviour: Johari Window; Transactional Analysis – ego states, types of transactions, life positions, applications of T.A.

UNIT 3

Group Behaviour & Team Development: Concept of Group and Group Dynamics; Types of Groups; Formal and Informal Groups; Stages of Group Development, Theories of Group Formation; Group Norms, Group Cohesiveness; Group Think and Group Shift.

Group Decision Making; Inter Group Behaviour; Concept of Team Vs. Group; Types of teams; Building and managing effective teams.

Leaders versus Managers; Theories of leadership: Trait theory; behavioural theory; Fiedler's contingency theory; Hersey and Blanchard's; Situation theory leadership in 21st century; Leadership styles; Managerial Grid; Likert's systems of leadership; Normative model

UNIT 4

Organization Culture and Conflict Management: Organizational Culture- Concept, Functions, Socialization; Creating and sustaining culture; Managing Conflict – Sources, types, process and resolution of conflict; Managing Change; Managing across Cultures; Empowerment and Participation. Meaning of Power; Source of power; Implications for performance and satisfaction

Text Books:

1. Prasad, L.M.; *Organizational Behaviour*, Sultan Chand & Sons, 2003.
2. Stephen P., Robbins; *Organizational Behaviour*; "Prentice Hall of India Pvt. Ltd.", New Delhi, 2003.

Reference Books:

1. Luthans, Fred; *Organizational Behaviour*, Tata McGraw Hill, New Delhi, 2003.
2. Chabbra,T.N. & Singh,B.P., *Organization Behavior*,Sultan Chand & Sons.
3. Khanka, S.S.; *Organizational Behaviour*, Sultan Chand and Sons, New Delhi.
4. Joseph, Weiss; *Organization Behaviour and Change*, Vikas Publishing house, 2004.

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SEMESTER – II

PRACTICAL - II

Sub. Code: BCA - 207 **Credits: 04**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

THIRD SEMESTER EXAMINATION

CODE NO.	PAPER	L	T/P	CREDITS
BCA-301	SYSTEM ANALYSIS & DESIGN	3		3
BCA-302	COMPUTER ARCHITECTURE	3		3
BCA-303	DATA STRUCTURES USING C	3		3
BCA-304	HUMAN RESOURSE MANAGEMENT	3		3
BCA-305	COMPUTER NETWORKS	3		3
BCA-306	OPERATING SYSTEM	3		3
BCA-307	PRACTICAL LAB-3		4	4
	TOTAL	18	4	**22**

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – III

SYSTEM ANALYSIS & DESIGN

Sub. Code: BCA - 301 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Overview of system analysis & design: - business Systems concepts, System development life cycle, System Methodologies --- Structured Analysis, Structured Design, Structured Programming , E-R Models, Prototyping, Case Tools

UNIT 2

Project Selection --- Sources of Project Requests, managing Project Review & Selection, Preliminary Investigation, Feasibility Study --- Technical & Economical Feasibility, Operational Feasibility, System Requirements Specification & Analysis --- Fact Finding Techniques, Process Organization & Interaction, Data flow diagrams, Data Dictionaries, process organization and interactions. Decision analysis, Decision trees and tables.

UNIT 3

Data Input, Coding Techniques, Validating Input Data, Unit & Integration Testing, Testing Practices & Plans, System Controls, Audit Trails, System Administration Plan, System Backup Plans, System Maintenance & Evaluation, Preparation of Physical sites & User Training, Documentation & User Manuals

UNIT 4

Hardware Acquisition, Memory Processes, Peripherals, Benchmarking, Vendor Selection, Operating System, Languages Processes, Data Communication Network, Personnel Estimate, Performance & Acceptance Criteria

Suggested Readings:

1. Awad, Elias M; Systems analysis and design, New Delhi: Galgotia Publications,
2. Booch G; Object Oriented Analysis And Design, Addison Wesley

3. Brooks, Frederick P; Mythical man-month: Essays on software engineering, Delhi: Pearson Education Asia,.
4. Charette, R.N; Software engineering Risk Analysis and Management, Tata McGraw- Hill Publishing,.
5. Coles/Rowley; Access 7 Basic Skills, Letts Educational
6. Fairly, Richard E; Software engineering concepts, New Delhi: Tata McGraw- Hill Publishing,.
7. Humphrey, Watts S; Discipline for software engineering, Delhi: Pearson Education Asia,

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – III

COMPUTER ARCHITECTURE

Sub. Code: BCA - 302 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Register transfer and Micro-operations, Register Transfer Language, Bus and Memory. Transfers, Arithmetic, Logic Micro-operations, Shift Micro-operations.

Basic Computer Organization and Design :
Instruction and instructions Codes, Computer instructions, Timing and Control, instruction Cycle, Memory Reference Instructions, Input-output and Interrupts; Complete Computer Description.

UNIT 2

Programming the Basic Computer
Machine Language, Assembly Language, The assembler, program loops, programming Arithmetic and Logic, Subroutine, Inputs-Outputs programming. Micro-programmed Control; Control Memory, Address Sequencing, Micro- programmed Example, Design of Control Unit.

UNIT 3

Central Processing Unit
General Register Organization Stack Organization Instruction Formats, Addressing Modes, Data and Transfer Manipulation, Program Control, Reduced Instruction Set Computer, Pipeline and Vector Processing parallel processing pipelining, Arithmetic Pipeline, RISC vs. CISC, Vector Processing, Arrays Processors.

Computer Arithmetic
Addition and Subtraction, Multiplication Algorithms, Division algorithm, Floating-Point Arithmetic Operations, Decimal arithmetic Unit, Decimal Arithmetic Operations.

UNIT 4

Input-Output Organization

Peripheral Devices, Input-Output interface, Asynchronous Data Transfer, Modes of Transfer, Priority interrupt, Direct Memory Access (DMA), input-output processors (IOP), Serial communication multiprocessors, Inter-connection structures, Inter-processor, Inter-processor Communication and Synchronization, Cache Coherence.

Recommended reference books

1. V.C. Hamacher, Z.C. Vranesic, and S.G. Zaky: Computer Organization, Mc Graw Hill Internationa Edition.
2. John D. Carpinlli: Computer Systems Organization & Architecture Person Education Asia, 2001.
3. M. Morris Mano : Computer System Architectue, Prentice Hall of India.
4. John P. Hayes, Computer Architecture and Organization, Mc Graw Hill International Edition.
5. Vincent JP. Heuring and Harry f. Jorden : Computer Systems Design & Architecture, Addison Wesely, Pearson Education Asia, 2001.
6. James L. Antonakos: An Introduction to the Intel Family of Microprocessors, Pearson Education Asia, 2001.
7. Peter Norton's Introduciton to Computers, Third Edition, Mc Graw Hill.
8. Karen Miller: An Assembly Language Introduction to Computer Architecture, Oxford Universiry Press.

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – III

DATA STRUCTURES USING C

Sub. Code: BCA - 303 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Arrays: Representation of single and multidimensional arrays; sparse arrays- lower and upper triangular matrices and Tri-diagonal matrices, Stacks and Queues: Introduction and primitive operations on stack; Stack application: Infix, postfix, prefix expressions; Evaluation of postfix expression; Conversion from infix to postfix. Introduction and primitive operation on queues, D-queues and priority queues.

UNIT-2

Lists: Introduction to linked lists; Sequential and linked lists, operations such as traversal, insertion, deletion, searching, Two way lists and Use of headers
Trees: Introduction and terminology; Traversal of binary trees; Recursive algorithms for tree operations such as traversal, insertion, deletion;

UNIT-III

Multilevel indexing and B-Trees: Introduction: The invention of the B-tree; Statement of the problem; Indexing with binary search trees; Multilevel indexing, a better approach to tree indexes; B-trees: working up from the bottom; Example for creating a B-tree.

UNIT-IV

Sorting Techniques: Insertion sort, selection sort, merge sort, heap sort. Searching Techniques: linear search, binary search and hashing

TEXT:

1. E. Horowitz and S. Sahani, "Fundamentals of Data Structures", Galgotia Booksource Pvt. Ltd, 2003
2. R. S. Salaria, "Data Structure & Algorithms", Khanna Book Publishing Co. (P) Ltd., 2002.

REFERENCES:

1. P. S. Deshpande and O.G. Kakde, "C & Data Structure", Wiley Dreamtech, 1st Edition, 2003.
2. Y. Langsam et. al., "Data Structures using C and C++", PHI, 1999.
3. Schaum's outline series, "Data Structure", TMH, 2002

SYLLABUS
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EIILM University

SEMESTER – III

HUMAN RESOURSE MANAGEMENT

Sub. Code: BCA - 304 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1:

INTRODUCTION TO HUMAN RESOURCE MANAGEMENT
Introduction: Concept, nature, scope, objectives and importance of HRM; Evolution of HRM; difference between HRM and Human Resource Development, Importance of HRM- Activities and functions of HRM, Organization of HRM department- Role of HRM Department Limitations of HRM-Challenges before HRM

HUMAN RESOURCES PLANNING
Definition and objectives of Human Resource planning process of Human Resource planning factors influencing estimation of Human Resources.

UNIT 2

CONCEPT OF RECRUITMENT
Recruitment policy-Sources of Recruitment, Selection procedure

PERFORMANCE APPRAISAL
Concept, Need and objectives of performance Appraisal- Process Performance, Appraisal Methods, Uses and limitations of Performance Appraisal, Promotion, Transfer, Demotion.

TRAINING AND DEVELOPMENT
Meaning and Definition - Need, Objectives, Importance of Training, Training Methods-evaluation of Training Programme.

UNIT 3

WAGE AND SALARY ADMINISTRATION
Methods of wage payments-Employee Remuneration factors determining the level of remuneration- Profit sharing-Fringe Benefits and Employee services- Wages & Salary Administration

EMPLOYEE SEPARATION
Exit Policy, Voluntary Retirement Schemes, Lifetime employment without guarantee, Layoff, retrenchment.

UNIT 4
INDUSTRIAL CONFLICT AND DISPUTES
What are disputes, Cause of disputes, Settlement of disputes

EMPLOYEE BENEFITS AND SERVICES
Factors influencing Benefits and Services, Employee Security Benefits, Old-age and Retirement Benefits, Employee Health and Safety, Accident Prevention, Safety Engineering

Suggested Readings:

1. Human Resource Management and Personnel Management: K.Aswathappa
2. Management of Human Resources: R.S.Dwivedi
3. Human Resource Management & Human Relations -S. K. Bhatia and Nirmal Singh , V. P. Michael
4. Human Resource Management - P. C. Pardeshi
5. Personnel Management - C. B. Mamoria
6. Human Resource Management: Ian Beardswell and Len Holden.
7. Human Resource Management: S.S.Khankar.
8. Human Resource Management: Biswajeet Patnayak.
9. Essentials of Human Resource Management and Industrial Relations: P.Subba Rao.
10. Managing Human Resources: Arun Monappa.

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – III

COMPUTER NETWORKS

Sub. Code: BCA - 305 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Network & OSI and TCP/IP Models:
Introduction to communication and networks, protocols and standards, hardware and requirement for networks, line configuration, Network Topologies (Bus; Star; Ring; Star Bus; Star Ring and Physical Mesh, network transmission, transmission modes, categories of networks, advantages of computer networks. Clients; Servers and Peers based and Hybrid Networks; Server types

UNIT 2

OSI and TCP/IP Models:
Layered architecture, functions of the layers, TCP/IP Protocol suite, comparison of models

Transmission media:
Guided and unguided media, Transmission impairment, Shannon capacity

Introduction to signals & Multiplexing

Analog and digital signals, Periodic and A periodic signals, time and frequency domains, composite signals.

Multiplexing: Many to one, one to many, WDM, TDM, FDM.

UNIT 3

Error; detection and correction; Parity; LRC; CRC; Hamming code.

Data Link Control:
Line Discipline, Flow Control, Error Control

Data Link Protocols & LANs and MANs:
Concept of protocols, Asynchronous and Synchronous protocols, character and bit oriented protocols, connection oriented and connection-less protocols.

Local Area Network: Ethernet, Token Bus, Token Ring, FDDI.

Metropolitan Area Network: IEEE 802.6 (DQDB).

UNIT 4

Switching:
Circuit switching, packet switching, message switching.
Networking and Internetworking Devices:
Repeaters, bridges, gateways, routers, routing algorithms : Distance vector routing, Link state routing.

Suggested Readings:

1. Behrouz A. Forouzan; "Data communication and Networking"; Tata McGraw-Hill; 2004.
2. James F. Kurose and Keith W. Ross; "Computer Networking: A Top-Down Approach Featuring the Internet"; Pearson Education; 2003.
3. Larry L.Peterson and Peter S. Davie; "Computer Networks"; Harcourt Asia Pvt. Ltd.; Second Edition.
4. Andrew S. Tanenbaum; "Computer Networks"; PHI; Fourth Edition; 2003.
5. William Stallings; "Data and Computer Communication"; Sixth Edition; Pearson Education; 2000.
6. Networking Complete- 1st Edition 2002; BPB Publication (Text Book)
7. Mastering Local Area Networks By Christa Anderson & Mark Minasi – BPB Publication
8. Mastering Novell Netware-Currid C.C; C.A Gillett-BPB
9. MCSE: Networking Essentials Study Guide- Tata McGraw Hill Publication
10. Introduction to Local Area Networks
11. Computer Networks By- Tenen Baum- PHI Publication

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – III

OPERATING SYSTEM

Sub. Code: BCA - 306 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Introduction to Operating System
Operating system and its Evolution- Batch, Multiprogramming, Distributed, Parallel, Time Sharing, Real time System, Multi-user, Multitasking.

Operating System Organization
Basic OS functions, Operating System, Structure Monolithic System, Layered Systems, Virtual Machines, Client Server Model.

UNIT 2

Process Management
Process Concept, Processes Transition, Process Scheduling, Operation on process. Introduction to cooperative and concurrent processes. Inter process communication.

CPU Scheduling
Scheduling Criteria, Scheduling Algorithms (FCFS,SGF,Priority,RR)

Deadlocks
Conditions for deadlock, Methods of handling deadlock Prevention, Avoidance, Detection.

UNIT 3

Memory Management
Memory Management concept, Memory allocation, Memory Management techniques, Swapping, Paging and segmentation. Virtual Memory-demand Paging. Page Replacement algorithms, Allocation of Frames, Thrashing.

File Management

File concept, file structure, file Access, File operation, File Attributes, Directories-Directory structure, path Names, Directories operations file allocation Methods: Contiguous Linked indexed, free space Management Directory Implementation.

UNIT 4

Device Management function: I/O devices and controllers, interrupt handlers, device independent I/O software, user-space I/O software; disk scheduling; clock hardware software; terminal input/output software.

Concurrent programming: sequential and concurrent process; precedence graph, Bernsterins condition; time problem, classical process co-ordination problems, deadlock handling, Inter-process communication.

Text Books

1. Operating System Concepts, Silberschatz Galvin
2. Modern operating systems, A.S. Tannenbaum

References Books:

1. UNIX, concepts and applications, Sumitabha Das
2. Operating systems, Concept and design, Milenkovic
3. Unix Programming environment, Kernighan & R. Pike

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – III

PRACTICAL - III

Sub. Code: BCA - 307 **Credits: 04**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

FOURTH SEMESTER EXAMINATION

CODE NO.	PAPER	L	T/P	CREDITS
BCA-401	DATABASE MANAGEMENT SYSTEMS	3		3
BCA-402	PROGRAMMING IN VISUAL BASIC	3		3
BCA-403	SOFTWARE ENGINEERING	3		3
BCA-404	ADVANCED COMPUTER NETWORKS	3		3
BCA-405	INTERNET & WEBSITE MANAGEMENT	3		3
BCA-406	PRINCIPLES OF MANAGEMENT	3		3
BCA-407	PRACTICAL LAB – IV		4	4
	TOTAL	18	4	**22**

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – IV

DATABASE MANAGEMENT SYSTEMS

Sub. Code: BCA - 401 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Introduction to databases & Database Concept:
Requirement of databases, characteristics of the database, codes rules to convert a DBMS into RDBMS. Data models, schemas and instances, database architecture and data independence, database system environment, classification of DBMS SYSTEM, Database system utilities.

UNIT 2

Relation data model and constraint & SQL:
Domain, attributes, tuples and relations, domain and entity and referential integrity by using different constraints, basic relational algebra operations, additional relational operations
DML, DDL, DCL, Sub queries, working with views, emplimainting constraints like primary key, not null,,check,foreign key and unique, indexing

UNIT 3

Relational database design using ER to Relational mapping, mapping ERR model concept to relations, tuple relational calculus, Domain relational Calculus, Introduction to QBE Language.

UNIT 4

Normalization –first normal form, second normal form and third normal form, Boyce-codd normal form, functional dependencies, algorithm for relational database schema design, forth normal form ,join dependencies and fifth normal form, inclusion dependencies
Entity and Attributes, entity type, entity sets and value sets, Relationship types and degree, role names and recursive relationship, ER Model

TEXT BOOKS:

1. Fundamentals of Database System, Elmasri and Navathe, Pearson Education Asia.
2. Introduction to database, P. Desai

REFERENCE BOOKS:

1. Date, C.J: An Introduction to databaseb system, Vol-I & Vol-II, Addition Wesley Publishing Company, 2000
2. Ramakrishnan R. and J. Gehrke, Database management Systems, Mc Grawhill, Comapany, Higher Education, 2000
3. Database System Concepts by F. Korth

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – IV

PROGRAMMING IN VISUAL BASIC

Sub. Code: BCA - 402 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

1. Introduction to GUI and Windows Programming

- 1.1 GUI: Concept & Tools
  - 1.1.1 The Title Bar
  - 1.1.2 Menu System, Menus and the Menu Bar
  - 1.1.3 The Size Box
  - 1.1.4 System Menu box
  - 1.1.5 Icons
  - 1.1.6 Cursors
  - 1.1.7 Scroll Bars
  - 1.1.8 Tool Bar
  - 1.1.9 Client Area

2. Introduction to Visual Basic Environment

- 2.1 Features of Visual Basic
- 2.2 Starting Visual Basic
- 2.3 The Environment
- 2.4 The Special Features of the Menu Bar
- 2.5 Customising the Visual Basic Environment

UNIT 2

3. Concepts in Visual Basic

- 3.1 Events
- 3.2 Modules
- 3.3 Methods
- 3.4 Procedure
  - 3.4.1 Function Procedures
  - 3.4.2 SUB Procedures
- 3.5 Event Procedure
  - 3.5.1 Creating an Event Procedure

3.5.2 Parts of an Event Procedure
3.6 General Procedures
Creating a General Procedure

4. Working with Forms and Menus

4.1 Forms
4.2 Controls
4.3 Custom Controls
4.4 Properties
4.5 MDI Forms
4.5.1 Create an MDI Application
4.5.2 MDI Child Property
4.6 Menus
4.6.1 The Menu Editor
4.6.2 Creating a Menu
4.6.3 Creating Popup Menus
4.6.4 Growing Menus
4.6.5 Sub Menus

UNIT 3

5. Programming in Visual Basic

5.1 Data Types
5.2 Variables
5.3 Constants
5.4 Operators in Visual Basic
5.4.1 Arithmetic Operators
5.4.2 Comparison Operators
5.4.3 Logical Operators
5.5 5.5 Array and the Various Types
5.6 Control Arrays
5.6.1 Setting up the Control Array
5.6.2 To Remove a Control Array
5.6.3 To Add and Delete Controls at Run Time
5.7 User Defined Data Types
5.8 Control Structures
5.9 Unconditional Branch Statement
5.10 The With Statement
5.11 The Built-in Procedures of Visual Basic
5.11.1 Conversion Procedure
5.11.2 String Manipulation

UNIT 4

7. Creating an Application

7.1 Creating an Application
7.1.1 Defining the Problem

7.1.2 Designing the User Interface
7.1.3 Designing the Main Form
7.1.4 Writing the Code

8. Data Access

8.1 Data Access Overview
8.2 The Jet Database Engine
8.3 8.3 Bound Data Controls
8.4 8.4 Connectivity through DAO and ADO
8.5 8.5 Overview of RDO
8.6 Retrieving Data using Structured Query Language (SQL)
8.7 Querying a Database

Text Books:

1. Teach yourself Visual Basic in 21 days - Techmedia Publication

2. Black Book of Visual Basic - Dream Tech Press

Reference Books:

1. 1. Beginning in Visual Basic 6.0 - Wrox Publication
2. Mastering in Visual Basic - BPB Publication

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – IV

SOFTWARE ENGINEERING

Sub. Code: BCA - 403 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Software Engineering history, role & life cycle:
Software Crisis, What is Software Engineering, Software Life Cycle Models.

Software Quality Assurance:
Meaning of s/w quality, factors of quality assurance, SQA activities, levels of quality assurance, (testing, validation, and certification), ISO and CMM model for quality assurance.

UNIT 2

Analysis concepts and principles:
Requirement Analysis, Communication Techniques , Analysis Principles, Software prototyping , Specification /Software Requirement Specification

Analysis modeling:
Elements of the Analysis model, Data modeling, Functional modeling and Information Flow The mechanics of Structured analysis, The Data Dictionary, Overview of other classical analysis methods

UNIT 3

Design concepts and Principles & Design methods: Software Design and Software, Engineering, The Design Process, Design principles, Design concepts, Effective modular design , Design Heuristics for eff eeff effective modularity, The design model, Design documentation, Cohesion and Coupling

UNIT 4

Software testing &Software maintenance:
Functional testing, structural testing, test activities, debugging.

Software maintenance:
Categories of maintenance, the maintenance process, maintenance models, reverse engineering, software reengineering, estimation of maintenance cost, configuration management, documentation

TEXT BOOKS:

1. 1. Software Engineering A Practitioner's Approach Fifth Edition by Roger S pressman. McGraw Hill International Editions.
2. 2. Software Engineering , K.K. Aggarwal & Yogesh Singh

REFERENCE BOOKS:

1. System analysis and design, Awad
2. System Analysis and Design , Lee
3. S/W Engg. Concepts, Fairley S/W Engineering by Pankaj Jalote

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SEMESTER – IV

ADVANCED COMPUTER NETWORKS

Sub. Code: BCA - 404 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

NETWORKING FUNDAMENTALS

An Introduction to Networks; Network Topologies and Types; Networking; Exchange; Sharing; preserving and protecting Information; Sharing Hardware and Software Resources Need; Uses and Advantages of Network; Networks in the workplace (Tools; Tasks and Personnel) ; Network Topologies (Bus; Star; Ring; Star Bus; Star Ring and Physical Mesh); Network (Transmission) media (Wires; Cables; Fibre Optics; Wave) ; Communication Satellites, The Public Switched Telephone Network, The Mobile Telephone System, Defining Network Protocols (H/W Protocols; S/W Protocols; H/W – S/W Interface)

UNIT 2

PROTOCOLS

The OSI Model ; Major Protocol Suites ; Review of Protocols; Models and Implementations ; NetWare; IPX/SPX Protocols(Lower; Middle and Upper Layer Protocols); Internet Protocols (Middle and Upper Layer Protocols) ; Basics of Miscellaneous Protocols(SLIP; PPP; FDDI; X.25; frame relay ; ISDN; B-ISDN; SONET; SDH; ATM; SMRS)

DATA LINK LAYER

Error; detection and correction; Parity; LRC; CRC; Hamming code ;low Control and Error control - stop and wait ;go back-N ARQ; selective repeat ARQ- sliding window ;HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 ;FDDI - SONET ;Bridges.

UNIT 3

NETWORK LAYER
Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms, Quality of Service, Internetworking, The Network Layer in the Internet

TRANSPORT LAYER
Duties of transport layer; Multiplexing; Demultiplexing; Sockets; User Datagram Protocol (UDP); Transmission Control Protocol (TCP) ;Congestion Control ;Quality of services (QOS); Integrated Services.

UNIT 4

APPLICATION LAYER
Domain Name Space (DNS); SMTP; FTP; HTTP - WWW; Security; Cryptography.

NETWORK MANAGEMENT AND SECURITY
Understanding IEEE Standards; Understanding Wireless Networks

Suggested Readings:

1. Behrouz A. Forouzan; "Data communication and Networking"; Tata McGraw-Hill; 2004.
2. James F. Kurose and Keith W. Ross; "Computer Networking: A Top-Down Approach Featuring the Internet"; Pearson Education; 2003.
3. Larry L.Peterson and Peter S. Davie; "Computer Networks"; Harcourt Asia Pvt. Ltd.; Second Edition.
4. Andrew S. Tanenbaum; "Computer Networks"; PHI; Fourth Edition; 2003.
5. William Stallings; "Data and Computer Communication"; Sixth Edition; Pearson Education; 2000.
6. Networking Complete- 1st Edition 2002; BPB Publication (Text Book)
7. Mastering Local Area Networks By Christa Anderson & Mark Minasi – BPB Publication
8. Mastering Novell Netware-Currid C.C; C.A Gillett-BPB
9. MCSE: Networking Essentials Study Guide- Tata McGraw Hill Publication
10. Introduction to Local Area Networks
11. Computer Networks By- Tenen Baum- PHI Publication

SYLLABUS
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EIILM University

SEMESTER – IV

INTERNET & WEBSITE MANAGEMENT

Sub. Code: BCA - 405 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Introduction to Internet, Internet Services, WWW, Working of Internet, Internet Connection Concepts, Introduction to internet, DNS working, Configuring Internet Connection, Connecting LAN to Internet. Internet, Intranet, Extranet.
Single User, Multi User, Server, Workstation, Client-Server environment, Computer Network, Types of Computer Network : LAN, WAN, MAN : Network Protocols, Windows and GUI.
E-Mail Concepts - configuring E-Mail Program, Sending and Receiving Files through E-Mail, Fighting Spam, Sorting Mail, and Avoiding E-Mail Viruses.

UNIT 2

Web Browsers, Search Engines, Categories of search Engines, Searching Criterion, Surfing the Net, Hypertext Transfer Protocol (HTTP), URL. Other Internet Tools. Online Chatting , Messaging, and Conferencing Concepts, E-Mail mailing lists, Usenet newsgroup concepts- Reading USENET newsgroups, internet Relay Chat, Instant messaging, Web-Based chat rooms and discussion boards, Video conferencing. Streamlining Browsing, Keeping track of Favorite Web Sites, Web Security, Privacy, and Site-Blocking. Searching the Web – Audio and Video on the Web.

UNIT 3

HTML : Internet Language, Understanding HTML, Create a Web Page, Linking to other Web Pages, Publishing HTML Pages, Text Alignment and Lists, Text Formatting Fonts Control, E-mail Links and link within a page, Creating HTML Forms.

UNIT 4

Creating Web Page Graphics, Putting Graphics on a Web Page, Custom Backgrounds and Colours, Creating Animated Graphics. Web Page Design and layout, Advanced Layout with Tables, Using Style Sheets.

Suggested Readings :

1. Dick Oliver : Tech Yourself HTML 4 in 24 Hours, Techmedia.
2. Satish Jain : "O" – Level Information Technology.
3. Craig Zacker : 10 minutes Guide to HTML Style Sheets, PHI.
4. V.K. Jain : "O" – Level Information Technology, BPB Publications.
5. Gill, Nasib Singh : Essentials of Computer and Network Technology, Khanna Books Publishing Co., New Delhi.
6. Margaret Levine Young : Internet - The Complete Reference.
7. Harley Hahn : The Internet - Complete Reference, TMH.

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – IV

PRINCIPLES OF MANAGEMENT

Sub. Code: BCA - 406 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Introduction: Concept, nature, process and significance of management; Managerial levels, skills, functions and roles; Management Vs. Administration; Coordination as essence of management; Development of management thought: classical, neo-classical, behavioral, systems and contingency approaches.

UNIT 2

Planning: Nature, scope and objectives of planning; Types of plans; Planning process; Business forecasting; MBO; Concept, types, process and techniques of decision-making; Bounded Rationality.
Organising: Concept, nature, process and significance; Principles of an organization; Span of Control; Departmentation; Types of an organization; Authority-Responsibility; Delegation and Decentralization; Formal and Informal Organization.

UNIT 3

Staffing: Concept, Nature and Importance of Staffing.
Motivating and Leading: Nature and Importance of motivation; Types of motivation; Theories of motivation-Maslow, Herzberg, X, Y and Z; Leadership – meaning and importance; Traits of a leader; Leadership Styles – Likert's Systems of Management, Tannenbaum & Schmidt Model and Managerial Grid.

UNIT 4

Controlling: Nature and Scope of control; Types of Control; Control process; Control techniques – traditional and modern; Effective Control System.

Text Books

1. Stoner, Freeman and Gilbert Jr.; *Management,* Prentice Hall of India, New Delhi, 2003.

2. Gupta, C.B.; *Management Concepts and Practices,* Sultan Chand and Sons, New Delhi, 2003.

Reference Books

1.Koontz. O Donnel and Weirich-"Management",Tata McGraw Hill Publishing Company,New Delhi,2001.

2.R.K.Chopra-"Principles&Pracitices of Management", Sun India Publication.

3.P.C.Tripathi and P.N.Reddy," Principles&Pracitices of Management",2nd edition,Tata McGrawHill.

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – IV

PRACTICAL - IV

Sub. Code: BCA - 407 **Credits: 04**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

FIFTH SEMESTER EXAMINATION

CODE NO.	PAPER	L	T/P	CREDITS
BCA-501	JAVA PROGRAMMING & INTERNET APPLICATIONS	3		3
BCA-502	COMPUTER GRAPHICS	3		3
BCA-503	SOFTWARE TESTING QUALITY ASSURANCE	3		3
BCA-504	ADVANCED RDBMS	3		3
BCA-505	PERSONEL MANAGEMENT	3		3
	ELECTIVE 1	3		3
BCA-506	INTERNET & INTRANET			
BCA-507	NETWORK MANAGEMENT			
BCA-508	ELECTRONIC & DATA COMMUNICATION			
BCA-509	IT INFRASTRUCTURE			
BCA-510	NETWORK SECURITY AND CRYPTOGRAPHY			
BCA-511	E-BANKING AND SECURITY TRANSACTIONS			
BCA-512	PRACTICAL LAB-V		4	4
	TOTAL	18	4	**22**

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – V

JAVA PROGRAMMING & INTERNET APPLICATION

Sub. Code: BCA - 501 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Internet Application : Introduction to Internet : E-mail Architecture & Services, user gent, message format & transfer, SMTP; World Wide Web (www)- Domain Name System, The Client side, The server side, Creating and locating information on the web, search engines, URL's, HTTP, FTP, Telnet; Web Browsers, Chat & Bulletin Board, USENET & NNTP (Network News Transfer Protocol).

UNIT 2

Java and The Internet : The Java programming language and its characteristics; Java run-time environment; Java compiler; Java developer kit; running Java applications and Java applets.

UNIT 3

Java Programming: Elements of Java : Data types, scalar data types, operators & expressions, control structures. Class, object & methods, constructors, finalizer, visibility controls, array, string & vectors, inheritance, interfaces, package multithreading, applet programming. Exception Handling-Defining and throwing exceptions, creating your own exceptions.

UNIT 4

Input/Output : streams, byte and character stream, the class printstream, data streams, string tokenizer class, stream tokenizers. Delegation Event Model. AWT classes, AWT control, Layout managers & menus.

References :

1. Comer Douglas E. : Computer Networks and Internets, Addison-Wesley.
2. Ince Darrel & Freeman Adam : Programming the Internet with Java, revised edition, Addison-Wesley.

3. Balagurusamy E.: Programming with Java, Latest Edition, Tata McGraw-Hill.
4. Schildt H.: The Complete Reference Java 2, Latest Edition, Tata McGraw-Hill.
5. Mughal K.A., Rasmussen R.W. : A Programmer's Guide to Java Certification, Addition-Wesley.

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – V

COMPUTER GRAPHICS

Sub. Code: BCA - 502 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Definition, Application areas of Computer graphics, Graphical user interface, Cathod ray tubes, Random scan displays, Raster scan displays (with introduction to flickering, interlacing. American standard video etc), Color CRT monitors, Flat panel displays (Plasma Panels, Liquid crystal displays, Electroluminescent displays), Graphics software (GKS, PHIGS), Color Models (RGB, CMYK, HSV, Lookup tables etc.)

UNIT 2

Raster Graphics Algorithms: Line drawing algorithms (DDA, Bresenham's algo), Circle and Ellipse drawing algorithms

2-D Transformations and Projections: Transformations (Rotation, Reflection, shearing, scaling), Homogeneous coordinate representation, Translation.

UNIT 3

3-D Transformations and Projections: Transformations (Rotation, Reflection, shearing, scaling), Homogeneous coordinate representation, Translation, Projection classification, Parallel projections, Perspective projections (One point, Two).

UNIT 4

Two dimensional Clipping and visible surface detection methods: Viewing pipeline, window and viewport, Sutherland Cohen sub division algorithm, Cyrus-beck algorithm, classification of visible surface detection

algorithm, Backface algorithm,, Depth sorting method, Area subdivision method etc.

Suggested Readings :

1. Donald Hearn and M. Pauline Baker : Computer Graphics, PHI Publications.
2. Plastock : Theory & Problem of Computer Gaphics, Schaum Series.
3. Foley & Van Dam : Fundamentals of Interactive Computer Graphics, Addison-Wesley.
4. Newman : Principles of Interactive Computer Graphics, McGraw Hill.
5. Tosijasu, L.K. : Computer Graphics, Springer-Verleg.

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – V

SOFTWARE TESTING AND QUALITY ASSURANCE

Sub. Code: BCA - 503 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT I

Introduction**:** Software Testing Fundamental, Testing Objectives, Testing Principles, Testability, Test Case Design, White-Box Testing, Basis Path Testing, Flow Graph Notation, Cyclomatic Complexity Deriving Test Cases, Graph Matrices, Control Structure Testing, Condition Testing, Data Flow Testing, Loop Testing.

UNIT II

Black-Box Testing, Graph-Based Testing Methods, Equivalence Partitioning Boundary Value Analysis, Comparison Testing, Orthogonal Array Testing, Testing for Specialized Environments, Architectures, and Applications, Testing GUIs, Testing of Client/Server Architectures Testing Documentation and Help Facilities Testing for Real-Time Systems

UNIT III

A Strategic Approach to Software Testing, Verification and Validation, Organizing for Software Testing, A Software Testing Strategy, Criteria for Completion of Testing, Strategic Issues, Unit Testing, Unit Test Considerations, Unit Test Procedures, Integration Testing, Top-down Integration, Bottom-up Integration, Regression Testing, Smoke Testing, Comments on Integration Testing, Integration Test Documentation, Validation Testing, Validation Test Criteria, Configuration Review, Alpha and Beta Testing, System Testing, Recovery Testing, Security Testing, Stress Testing, Performance Testing, The Art of Debugging. The Debugging Process, Psychological Considerations, Debugging Approaches.

UNIT IV

Quality Concepts, Quality, Quality Control, Quality Assurance, Cost of Quality, The Quality Movement, Software Quality Assurance, Background Issues, SQA Activities, Software Reviews, Cost Impact of Software Defects, Defect Amplification and Removal, Formal Technical Reviews, The Review Meeting, Review Reporting and Record

Keeping, Review Guidelines, Formal Approaches to SQA, Statistical Software Quality Assurance, Software Reliability, Measures of Reliability and Availability, Software Safety, Mistake-Proofing for Software, The ISO 9000 Quality Standards, The approach to Quality Assurance Systems, The ISO 9001 Standard, The SQA Plan

Text Books:

1. William Perry, "Effective Methods for Software Testing", John Wiley & Sons, New York, 1995.
2. Cem Kaner, Jack Falk, Nguyen Quoc, "Testing Computer Software", Second Edition, Van Nostrand Reinhold, New York, 1993.
3. Boris Beizer, "Software Testing Techniques", Second Volume, Second Edition, Van Nostrand Reinhold, New York, 1990.
4. Louise Tamres, "Software Testing", Pearson Education Asia, 2002

Reference Books:

1. Roger S. Pressman, "Software Engineering – A Practitioner's Approach", Fifth Edition, McGraw-Hill International Edition, New Delhi, 2001.
2. Boris Beizer, "Black-Box Testing – Techniques for Functional Testing of Software and Systems", John Wiley & Sons Inc., New York, 1995.
3. K.K. Aggarwal & Yogesh Singh, "Software Engineering", New Age International Publishers, New Delhi, 2003.
4. Marc Roper, "Software Testing", McGraw-Hill Book Co., London, 1994.
5. Gordon Schulmeyer, "Zero Defect Software", McGraw-Hill, New York, 1990.
6. Watts Humphrey, "Managing the Software Process", Addison Wesley Pub. Co. Inc., Massachusetts, 1989.
7. Boris Beizer, "Software System Testing and Quality Assurance", Van Nostrand Reinhold, New York, 1984.

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – V

ADVANCED RDBMS

Sub. Code: BCA - 504 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

INTRODUCTION

Evolution of Database, , Database System Concepts and Architecture, Data Models, Schemas, and Instances, DBMS Architecture and Data Independence, Database Languages and Interfaces, The Database System Environment, Classification of Database Management Systems

UNIT 2

DML, DDL, DCL, Sub queries, working with views, implementing constraints like primary key, not null,, check, foreign key and unique, indexing. Inheritance, Specialization and Generalization Constraints and Characteristics of Specialization and Generalization Modeling of UNION Types Using Categories An Example UNIVERSITY EER Schema and Formal Definitions for the EER Model Conceptual Object Modeling Using UML Class Diagrams Entity-Relationship and Object Modeling Subclasses, Superclass

UNIT 3

Indexing, Types of Single-Level Ordered Indexes, Multilevel Indexes, Dynamic Multilevel Indexes Using B-Trees and B+-Trees, Indexes on Multiple Keys, Other Types of Indexes
Data Integrity, Functional Dependencies Concept of Redundancy, Introduction of Normalization**,** Types of Normalization, 1NF, 2NF, 3NF, BCNF, 4NF, 5NF. Features of Normalization

UNIT 4

Serializability, Locks 2PL, 3PL**,** Transaction Processing, Atomicity, Consistency, Independence and Durability, (ACID) Principle, Concurrency Anomalies

Suggested Readings :

1. Raghurama Krishnan : Data base Management Systems, Johannes Gehrke, Tata McGraw Hill Latest Edition.
2. Siberschatz, Korth : Data base System Concepts, McGraw Hill, latest edition.
3. P. Radha Krishna : Database Management Systems, HI-TECH Publications.
4. C.J. Date : Introduction to Database Systems, Pearson, Education.
5. Rob & Coronel : Data base Systems design, Implementation, and Management, latest Edition, Thomson.
6. Elmasri Navrate : Data base Management System, Pearson Education.
7. Mathew Leon : Data base Management System, Leon Vikas.
8. Connoley : Data base Systems, Pearson Education.

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – V

PERSONEL MANAGEMENT

Sub. Code: BCA - 505 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

PERSONNEL MANAGEMENT IN CONTEXT
Personnel management in perspective; .personnel management in the lean organization; personnel management in the extended organization.

JOB DESIGN
Introduction; job design; characteristics of job design; job enrichment; job rotation; job reengineering; job design strategy; job design models. Job satisfaction.

UNIT 2

PLANNING & RESOURCES
Manpower & HR Planning; Recruitment & selection; equality in employment and Induction Training of Employee.

EMPLOYEE DEVELOPMENT
Training need; types; importance; and management development.

PAY & PERFORMANCE
Purpose of performance evaluation; development of performance measures; methods of performance evaluation .purpose of reward; bases for rewards system; model for reward system; career and corporate development.

UNIT 3

COMPENSATION MANAGEMENT
Introduction: Compensation; meaning; objectives; nature of compensation; types of compensations; compensation responsibilities; Compensation system; Design issues: Compensations Philosophies; compensation approaches; decision about compensation;

compensation- base to pay; individual Vs team rewards; Perceptions of pay Fairness; legal constraints on pay systems.

UNION & MANAGEMENT
Trade unions; collective bargaining; workers participation; social security schemes.

UNIT 4

MANAGING INDUSTRIAL RELATIONS
Industrial laws & rules; government departments ; local authorities ;chamber of commerce technical & professional bodies ;Interpretation of labour policies .maintenance of good relation ship with radio; news papers ; & media.

LABOUR RELATIONS
Transfer ;promotion ;demotion ;discharge layoff & quit of staff ;labour management conflict ;its evil effects ;remedies ;wages boards ;joint council etc. Employer employee cooperation; Factory act.

Suggested Readings:

1. 1.Personnel Management by Dr. NK Sahni; Yogesh Kumar; Kalyani Publication; Ludhiana.
2. Personnel Management by Singh and Chaghre.
3. Personnel Management by CB Mamoria.
4. Personnel Management in Industrial Relations in Banking Industry by B. Prabhakar Rao.
5. Personnel Management by Dr. Nitish Sengupta .

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – V

ELECTIVE - I

INTERNET & INTRANET

Sub. Code: BCA – 506 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Internet : Internet Accounts. Telephone, Cable and Satellite connections, Dial up networking, setting up a dial up connection. high speed connection (ISDN, ADSL and Cable modems), Networking Essentials (Lease Line, Routers, Modems), Intranets, E-mail concepts (receiving, sending and receiving Secure E-mail, chatting and conferencing, E-mail, Newsgroup, IRC,ICQ, Yahoo Pager, Voice mail and Video conferencing.

UNIT 2

World Wide Web : Elements of the Web, Web browser, viewing pages with a browser, using a browser for Mail, News and chat, Security and Privacy issues (cookies, firewalls, executable Applets and scripts, blocking system), Netscape navigator and Communicator and features therein Internet Explorer and features therein, Lynx, Opera finding an installing Players, Plug-Ins and Active controls, dealing with Web pages that contain Active X, Java an Java Script, playing streaming Audio and Video, playing MP music. Using Search engines, subscriptions and channels, making use of web resources (Portal, News and weather, sports Personal Financing and Investing, Entertainment, shopping, Computers and Internet, Travel, Health and Medicine, Communities)

UNIT 3

Creating and Maintaining Web Sites : Planning, Navigation and Themes, Elements of a Web page, steps of creating a site, publishing and publicizing site structuring web site, starting a Web Page (HTML Tags Standard Tags), Formatting Text, Adding Pictures and links, Gathering information in forms, formatting page in frames, formatting web page by using GIF, JPEG, getting Web Clip Art, Progressive Display and transparency, optimizing images on the web, animating web graphics, Anti-aliasing, Image Slicing, Seamless Tiling, Multimedia graphics, Capturing Audio, generating digital file, editing, processing, encoding Audio, generating digital file, editing, processing encoding and

linking the audio, file, unloading web pages, in loading web pages, unloading by using FTP, Netload, Front Page Express and Netscape Composer, analyzing web traffic, building traffic to your site, File Transfer Protocol (FTP) and File Transfer Protocol Programs.

UNIT 4

HTML tables, JavaScript, CGI Introduction to Perl, Perl: Control structures, hashes, basic I/O, regular expressions, string handling, sorting, formatting data CGI programming. The basics of HTML as used with ASP. Using forms to obtain information from users ASP variables and arrays, ASP control structures (loops, conditions, procedures, functions) ASP objects Creating and reading cookies, Connecting a web page to a database (retrieving updating, and inserting data into a data base. Error handling and debugging ASP scripts. Introduction to XML, Setting up Web servers, Configuring Web and FTP servers.

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – V

ELECTIVE - I

NETWORK MANAGEMENT

Sub. Code: BCA - 507 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

UNIT 1

Network Management Architectures & Applications, Management Standards and Models**,** Network Management Functions, Configuration Management & Auto-discovery, Configuration Database & Reports, bstract Syntax Notation One (ASN.1), SNMP v1, Std. Management Information Base (MIBs), SNMPv1 Protocol.

UNIT 2

Network Management Functions ,Fault Management, Fault Identification and Isolation, Event Correlation Techniques, SNMP v2, Version 2 Protocol Specification, Version 2 MIB, Enhancements, MIB-II, Case Diagrams, Network Management Functions, Security Management, Protecting Sensitive Information, Host and User Authentication, Key Management

UNIT 3

SNMP v3, Version 3 Protocol & MIB, SNMP v3 User Based Security Model, View Based Access Model, Network Management Functions, Accounting Management, Performance Management, Network Usage, Metrics and Quotas

UNIT 4

Remote Network Monitoring RMON 1, Statistics, collection, Alarms and Filters, Remote Network Monitoring RMON 2, Monitoring Network Protocol Traffic, Application-Layer Visibility, Management Tools, Systems and Applications, Test and Monitoring Tools, Integrating Tools, Development Tools, Web-based Enterprise Management

Required Text(s):[Subr] Subramanian, M., Network Management: Principles and Practice. Reading, MA: Addison-Wesley. (2000) ISBN 0-201-35742-9

Recommended:[Maur] Mauro, D.R. & K.J. Schmidt, Essential SNMP, O'Reilly & Associates, Sabastopol, CA. (2001). ISBN 0-596-00020-0

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – V

ELECTIVE - I

ELECTRONIC & DATA COMMUNICATION

Sub. Code: BCA - 508 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Modulation **[**Principles of Modulation, AM and FM Modulator Circuits, Pulse Code Modulation, Baseband Modulation, M-ary Pulse Modulation waveforms, binary signaling and decoding. Digital Band-pass Modulation]

UNIT 2

Demodulation [Basics of Demodulation and detection, signals and Noise, Detection of Binary Signal in Gaussian Noise, Demodulation of shaped Pulses, Digital Signal in Gaussian Noise, Demodulation of shaped Pulses, Digital Band Pass Demodulation], Data transmission [Basic Concepts. Data Communication Systems, Serial Data formats. encoded data formats, error detection and correction].

UNIT 3

Electromagnetic spectrum, information about microwave in Communications, FM Microwave Radio Repeaters, Satellite, Geosynchronous Satellites, Look angles, Orbital classifications Spacing and Frequency allocation, Multiple accessing, Channel Capacity.] and optical fiber communication [Basic concept of light propagation, Fiber Cables, Optical fiber versus Metallic cable facilities, Light sources, Optical Detectors, Fiber cable losses, wave division multiplexing, fiber distributed data interface the fiber channel, SONET].

UNIT 4

ISDN [ISDN services, subscriber access to ISDN, B Channels, D Channels, H channels, ISDN services, subscriber access to ISDN, B Channels, D Channels H channels, ISDN layers, Broadband ISDNI, DSL [Digital Subscriber Lines : HDSL, VDSL, SDSI, IDSL].

Suggested Readings:

1. Behrouz A. Forouzan; "Data communication and Networking"; Tata McGraw-Hill; 2004.
2. James F. Kurose and Keith W. Ross; "Computer Networking: A Top-Down Approach Featuring the Internet"; Pearson Education; 2003.
3. Larry L.Peterson and Peter S. Davie; "Computer Networks"; Harcourt Asia Pvt. Ltd.; Second Edition.
4. Andrew S. Tanenbaum; "Computer Networks"; PHI; Fourth Edition; 2003.
5. William Stallings; "Data and Computer Communication"; Sixth Edition; Pearson Education; 2000.
6. Networking Complete- 1st Edition 2002; BPB Publication (Text Book)
7. Mastering Local Area Networks By Christa Anderson & Mark Minasi – BPB Publication
8. Mastering Novell Netware-Currid C.C; C.A Gillett-BPB
9. MCSE: Networking Essentials Study Guide- Tata McGraw Hill Publication
10. Introduction to Local Area Networks
11. Computer Networks By- Tenen Baum- PHI Publication

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – V

ELECTIVE - I

IT INFRASTRUCTURE

Sub. Code: BCA - 509 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Hardware: The parts of PC

Hardware components of a computer system, PC system unit packaging styles, Power supply, Floppy disk drives, Hard, disk drives, CD-ROM drives, System unit's motherboard, Basic or standard adapter cards, multi I/O port adapter board, Display adapter, Sound cards, LAN and network adapters, Modems and PC connection

Disks

Basic disk concepts, Varieties of disks, Disk controller types, Detailed disk structure.

UNIT 2

Built in BIOS

Idea behind BIOS, What does ROM-BIOS do, How does the BIOS work, BIOS and booting

Encoding and Modulation:

Digital to digital conversion, analog to digital conversion, analog to analog conversion

Error detection and correction:

Many to one, one to many, WDM, TDM, FDM, telephone system, DSL, CDMA, FTTC

UNIT 3

Datalink control protocols:

Line discipline, flow control, error control, synchronous and asynchronous protocols HDLC, SDLC

Point to point protocols:
Transmission states, PPP layers, LCP, authentication, NCP

UNIT 4

ISDN: Services, historical outline, subscribers' access, ISDN layers, broadband ISDN

Overview of Technologies:
SONET/SDH-layers, design goals, architecture, services and applications

Satellite Networks:
Polling, ALOHA, FDM, TDM, CDMA

TEXT BOOK:

1. 1. [PN] Peter Norton, Inside the PC, Sixth Edition, Prentice Hall Computer Publications
2. 2. [FOR] Behrouz A, Forouzan: Data Communication and Networking, 2nd Edition, Tata McGraw-Hill,2000

REFERENCE BOOKS:

1. 1. J. F. Hayes, Modelling and Analysis of Computer Communication Networks, Plenum Press
2. 2. D. Bertsekas and R. Gallager, Data Networks, 2nd Edition, Prentice Hall, India.
3. [Tan] A.S. Tanenbaum, "Computer Networks', PHI

SYLLABUS
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EIILM University

SEMESTER – V

ELECTIVE - I

NETWORK SECURITY AND CRYPTOGRAPHY

Sub. Code: BCA - 510 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Introduction: What cryptography is about, Protocols, parties and adversaries, Cryptanalyst and computer security the rules of the game, Approaches to the study of cryptography, Phases in the cryptography's Development, Cryptanalysis-driven design.

Block Ciphers: What is a block cipher? Data Encryption Standard (DES) Key recovery attacks on block ciphers, Iterated DES and DESX, Advanced encryption Standard (AES), Limitations of recovery key based security, Problems.

UNIT 2

Encryption and decryption, Conventional cryptography, Public-key cryptography, How PGP works, Keys, Digital signatures, Digital certificates, Validity and trust, Certificate Revocation, What is a passphrase, Key splitting.

Symmetric Encryption :Some Symmetric Encryption schemes, Issues In privacy, Indistinguishability under chosen-plaintext attack, Example chosen-plaintext attacks

Communication Security, Authentication Protocols, E-Mail Security, Web Security, Social Issues

UNIT 3

Program Security : Secure Programs, Non-malicious Program Errors, viruses and other malicious code, Targeted Malicious code, controls

Message Authentication : The setting, Privacy does not imply authenticity, Syntax of message-authentication schemes a definition of security for MACs

Digital signatures : Digital signature schemes, A notion of security, RSA based signatures Security in Network : Threats in Network, Network Security Controls, Firewalls, Intrusion Detection Systems, Secure E-mail.

UNIT 4

Administering Security : Security Planning, Risk Analysis, Organizational, Security, policies, Physical Security. Legal Privacy and Ethical Issues, in Computer Security.

Protecting Programs and data, Information and the law, Rights of Employees and employers, Software failure, Computer Crime, Ethical issues in Computer Security, Case studies of Ethics.

Suggested Readings :

1. P. Pfleeger, Shari Lawrence Pfleeger Charles : Security in Computing, PHI.
2. William Stallings : Cryptography & Network Security, Pearson Education.
3. Charlie Kaufman, Radia Perlman, Mike Speciner : Network Security, Private communication in a public world, PHI.
4. Douglas R. Stinson : Cryptography – Theory and Practice,CRC Press.
5. Bruce Schneier, Niels Ferguson : Practical Cryptography, Wiley Dreamtech India Pvt. Ltd.

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SEMESTER – V
ELECTIVE - I

E-BANKING AND SECURITY TRANSACTIONS

Sub Code: BCA - 511 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Introduction :
Definition, Transaction websites components, E-Banking support services, Wireless Banking

E-Banking Risk :
Transaction/Operation Risk, Credit Risk, Liquidity/Internet Risk, Price Risk, Strategic Risk, Reputation Risk

UNIT 2

Risk Management of E-Banking Activities :
Board of Management oversight, Managing outsourcing relationship, Information security Program Administrative control, Legal and compliance Issue

UNIT 3

Laws regulation and guidelines: Electronics money, Regulating e-transactions, Role of RBI and Legal issues, Transnational transactions of E-Cash, Credit Card and Internet, Laws relating to Internet credit cards, Secure Electronic Transitions

UNIT 4

E-security: Introduction to New Challenges and new Threats, Security, Legal consideration

References :
1 Mark O' Neill "Web Services Secutiry"
2 Nixon Brian "Teach yourself E-Banking"
3 E-Banking: Global Perspective by Vivek Gupta, Edition June 2000, ICFAI University Press

SYLLABUS
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EIILM University

SEMESTER – V

ELECTIVE - I

PRACTICAL - V

Sub Code: BCA - 512 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

SIXTH SEMESTER EXAMINATION

CODE NO	PAPER	L	T/P	CREDITS
BCA-601	ADVANCED IT INFRASTRUCTURE	3		3
BCA-602	PROJECT MANAGEMENT	3		3
BCA-603	OPERATION RESEARCH	3		3
	ELECTIVE 2	3		3
BCA-604	MULTIMEDIA & ITS APPLICATION			
BCA-605	E-COMMERCE			
BCA-606	DISTRIBUTED DATABASES			
BCA-607	MANAGEMENT INFORMATION SYSTEM			
BCA-608	DATAWAREHOUSE AND DATA MINNING			
BCA-609	ENTERPRISE RESOURCE PLANNING			
	ELECTIVE 3	3		3
BCA-610	NET FRAMEWORKS			
BCA-611	ADVANCED JAVA			
BCA-612	LINUX OPERATING SYSTEM			
BCA-613	ARTIFICAL INTELLIGENSE			
BCA-614	ADVANCE WEB TECHNOLOGY			
BCA-615	DIGITAL IMAGE PROCESSING			
BCA-616	MAJOR PROJECT		7	12
	TOTAL	15	7	22

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SEMESTER – VI

ADVANCED IT INFRASTRUCTURE

Sub Code: BCA - 601 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Hardware components of a computer system, PC system unit packaging styles, Power supply, Different Disk Structures, Floppy disk drives, Hard, disk drives, CD-ROM drives, System unit's motherboard, Basic or standard adapter cards, multi I/O port adapter board, Display adapter, Sound cards, LAN and network adapters, Modems and PC connection

Guided Transmission Media, Wireless Transmission, Communication Satellites, The Public Switched Telephone Network, The Mobile Telephone System, Cable Television

UNIT 2

Digital to digital conversion, analog to digital conversion, analog to analog conversion Multiplexing, Multiplexer, De-Multiplexer, Many to one, one to many, WDM, TDM, FDM, telephone system, DSL, CDMA, FTTC, The Domain Name System, Electronic Mail, The World Wide Web, Multimedia

UNIT 3

The Channel Allocation Problem, Multiple Access Protocols, Ethernet, Wireless LANs, Broadband Wireless, Bluetooth, Data Link Layer Switching.

UNIT 4

ISDN: Services, historical outline, subscribers' access, ISDN layers, broadband ISDN.

Technologies:
X.25, ATM and SONET/SDH-layers, design goals, architecture, services and applications

TEXT BOOK:

3. 1. [PN] Peter Norton, Inside the PC, Sixth Edition, Prentice Hall Computer Publications
4. 2. [FOR] Behrouz A, Forouzan: Data Communication and Networking, 2nd Edition, Tata McGraw-Hill,2000

REFERENCE BOOKS:

3. 1. J. F. Hayes, Modelling and Analysis of Computer Communication Networks, Plenum Press
4. 2. D. Bertsekas and R. Gallager, Data Networks, 2nd Edition, Prentice Hall, India.
3. [Tan] A.S. Tanenbaum, "Computer Networks', PHI

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – VI

PROJECT MANAGEMENT

Sub Code: BCA - 602 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Introduction to software project management and control, Whether software projects are different from other types of projects, The scope of project management. The management of project life cycle, Defining effective project objectives - where there are multiple stakeholders

Creation of a project plan -step by step approach, The analysis of project characteristics in order to select the best general approach, How to identify the products and hence the activities that need to be carried out, How to estimate the effort, resources and risks of each activity and allocate resources effectively, Many of these topics are then considered in a more technical detail in specialist sessions

UNIT 2

Software estimation, Where estimates are done, Problems with over- and under-estimates How to conduct estimates using various methods such as: expert judgment, parametric models, analogy and 'bottom-up' Deciding which approach to use

UNIT 3

Risk management: The nature of risk, and how to identify and evaluate the seriousness of possible causes of project failures How to keep these risks under control

Monitoring and control: Responsibility for monitoring and control How to access progress, How to collect the necessary information and present it How to get project back on-course

UNIT 4

Managing people and organising teams: How to select the best person for a task, What makes work worthwhile for project staff How people work in teams, How leadership styles need to be modified to deal with different situations, Projects that cross international-borders

Software quality: Why it really matters, How to define clearly what quality is needed, Techniques to help enhance software quality, Software Configuration Management

Text Books:

1Shari Pfleeger; Software Engineering: The Production of Quality Software, 2nd Edition, Macmillan, 1991
2Roger Pressman; Software Engineering: A Practitioner's Approach by, 4th Edition, McGraw-Hill, 1996
3Andrew Sage and James D. Palmer; Software Systems Engineering
4Ghezzi, Jayazeri and Mandrioli; Fundamentals of Software Engineering, Prentice-Hall, 1991
5Valdis Berzins and Luqi; Software Engineering with Abstractions, Addison Wesley, 1991
6Ian Sommerville; Software Engineering, Addison-Wesley
7Barbara Mynatt; Software Engineering with Student Project Guidance
8Roger Jones; Software Engineering
9David Alex Lamb; Software Engineering: Planning for Change, Prentice-Hall, 1988
10N. D. Birrell and M.A. Ould; A Practical Handbook for Software Development, Cambridge University Press, 1985/88
11Project Management, PMBOK

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – VI

OPERATION RESEARCH

Sub Code: BCA - 603 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Operations Research : Evolution, methodology and role in managerial decision making; Linear programming; Meaning, assumptions, advantages, scope and limitations; Formulation of problem and its solution by graphical and simplex methods; special cases in simplex method; infeasibility, degeneracy, unboundedness and multiple optimal solutions; duality

UNIT 2

Transportation problems including transshipment problems, Special cases in transportation problems; unbalanced problems, degeneracy, maximization objective and multiple optimal solutions; assignment problems, maximization objective and multiple optimal solutions

UNIT 3

PERT/CPM : Difference between PERT and CPM, network construction, calculating EST, EFT, LST, LFT, and floats, probability considerations in PERT, time-cost trade-off Decision theory : decision making under uncertainty and risk, Bayesian analysis; decision trees

UNIT 4

Game theory, pure and mixed strategy games, principle of dominance, two person zero sum game, Queuing theory : concept, assumptions and applications; analysis of queue system, Poisson distributed arrivals and exponentially distributed service time models (MMI and MMK); Simulation, meaning, process, advantages, limitations and applications

Suggested Readings :

1 Paneerselvam, Operations Research, Prentice Hall of India, N Delhi
2 Taha, Operations Research; An Introduction, Prentice Hall of India, N Delhi

3 Vohra, ND, Quantitative Techniques in Management; Tata McGraw Hill Publishing Company Ltd New Delhi
4 Kapoor, VK Operations Research; Sultan Chand & Sons, New Dehi
5 Sharma, JK Operations Research: Theory and Applications, Macmillan India Ltd New Delhi
6 Kalavathy, Operations Research, Vikas Publishing House, New Delhi

SYLLABUS
BACHELOR OF COMPUTER ADMINISTRATION
EIILM University

SEMESTER – VI

ELECTIVE - II

MULTIMEDIA & ITS APPLICATION

Sub Code: BCA - 604 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Introduction to multimedia technology-computers, communications and entertainment; framework for multimedia; M/M devices, presentation devices and the user interface; M/M presentation and authoring, Digital representation of sound and transmission, brief survey of speech recognition and generation; digital video and image compression; JPEG image compression standard; MPEG motion video compression; DVI technology; time-based media representation and delivery

UNIT 2

M/M Software environments; limitations of workstation operating system; M/M system service; OS Support for continuous media

UNIT 3

Applications; media stream protocol; M/M file systems and information representation; data-media for M/M and Hypermedia information Applications of M/M; intelligent M/M system Desktop BR; Virtual reality OS; distributed virtual environment system; virtual environment displays and orientation tracking; visually coupled system requirements intelligent VR software systems

UNIT 4

Applications of enviroments, in various fields, such as medical, entertainment, manufacturing, Business, School, Home, Public Place, Electronic books, Tele shopping, Interactive Video and Audio, Games

TEXT BOOKS:

1. 1 [TB1] Multimedia systems Design, PK Andleigh & K Thakrar, Prentics Hall PTR, 1996
2. 2 [TB5] Multimedia Systems, Ed by John FK Buford, Aqddison-Wesley Publicating Co, 1994

(V) REFERENCE BOOKS:

1. Web Multimedia Development dMiller, New Ridus Publishing, 1996
2. The McGraw Hill Multimedia handbook, Ed by Jessica Keyes, McGraw Hill Inc, 1994
3. Multimedia making it work (MMW)- Tay Vaughan – (TMH)
4. Multimedia: Computing, Communication and Application (MCCA)- Steinmetz and Nahrstedt- (ITS)

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SEMESTER – VI

ELECTIVE - II

E-COMMERCE

Sub Code: BCA - 605 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

E-Commerce Frame work; anatomy of E-Commerce applications; E-Commerce Consumer applications; E-Commerce organization applications. B2B, B2C, C2C.

Identifying Web Presence Goals; The Browsing Behaviour Model; Online Marketing; E-advertising; Internet Marketing Trends; Target Markets; E Branding; Marketing Strategies. Operating System Services; Developer Services; Data Services; Application Services; Store Services; Client Services. Types of E Commerce Solutions- Direct Marketing and Selling; Supply Chain Integration; Corporate Procurement; EDI.

UNIT 2

Application of E Commerce in Direct Marketing and Selling; Value Chain Integration; Supply Chain Management; Corporate Purchasing; Financial and Information Services; Obstacles in adopting E-Commerce Applications; Future of E Commerce.

Information and Strategy; The virtual value chain; seven dimensions of ecommerce strategy; planning E-commerce project; E- commerce strategy and knowledge management; E-Business Strategy and Data Warehousing and Data Mining.

UNIT 3

Requirements of Intelligent Websites; Website Goals and Objectives; planning the budget; analyzing website structure; fixed versus flexible webpage design; choosing a page size ;website development tools; design alternatives; outsourcing web design; testing and maintaining websites.

UNIT 4

Overview of Electronic Payment Systems; Cybercash (Customer to Merchant Payments; Peer to Peer Payments; Security). Smart Card (Card Types; Closed or Open Security; Privacy; Card Costs; Non Card Costs); Electronic Banking; Electronic Fund Transfers.

EDI; EDI Implementation; Value added networks Work Flow; Automation Customization and internal Commerce; Supply chain Management.

Suggested Readings:

1. Doing Business on the Internet E-COMMERCE (Electronic Commerce for
2. Business) S. Jaiswal;Galgotia Publications.
3. E-Commerce An Indian Perspective; P.T.Joseph; S.J.; PHI.
4. Frontiers of electronic commerce – Kalakata; Whinston; Pearson.
5. E-Commerce fundamentals and applications Hendry Chan; Raymond Lee; Tharam Dillon; Ellizabeth Chang; John Wiley.
6. E-Commerce; S.Jaiswal – Galgotia.
7. E-Commerce; Efrain Turbon; Jae Lee; David King; H.Michael Chang.
8. Electronic Commerce – Gary P.Schneider – Thomson.
9. E-Commerce – Business; Technology; Society; Kenneth C.Taudon; Carol Guyerico Traver

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SEMESTER – VI
ELECTIVE - II

DISTRIBUTED DATABASES

Sub Code: BCA - 606 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT-1

Overview of Database, Requirement of databases, characteristics of the database, Distributed data processing, What is a DDBMS, Advantages and disadvantages of DDBMS, Problem areas, Overview of database and computer network concepts Distributed database Management System Architecture Transparencies in a distributed DBMS, Types of DDBMS, Distributed DBMS architecture Global directory issues

UNIT 2

Distributed Database Design Alternative design strategies, Distributed design issues, Fragmentation, Data allocation, Query Processing Issues, Objectives of query processing, Characterization of query processors, Layers of query processing, Query decomposition, Localization of distributed data

UNIT-3

Data Fragmentation, Replication, and Allocation Techniques for Distributed Database Design Optimizing Distributed Queries Factors governing query optimization, Centralized query optimization, Ordering of fragment queries, Distributed query optimization algorithms. An Overview of Client-Server Architecture and Its Relationship to Distributed Databases

UNIT 4

Overview of Concurrency Control and Recovery in Distributed Databases, Query Processing In Distributed Object base Systems Problems in accessing distributed objects, Distributed object assembly problem, Strategies for distributed object assembly Transaction Management The transaction concept, Goals of transaction management, Characteristics of transactions.

Reference Books:
1 MT Özsu and P Valduriez - Prentice-Hall Principles of Distributed Database Systems
2 MT Özsu, U Dayal and P Valduriez (editors) Distributed Object Management - Morgan-Kaufmann
3 S Ceri and G Pelagatti - McGraw Hill Book Company Distributed Databases Principles and Systems
4 A Dogac, MT Özsu, A Billiris, and T Sellis (editors) - Springer-Verlag Advances in Object-Oriented Database Systems
5 W Kim (editor) Modern Database Systems - The Object Model, Interoperability, and Beyond

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SEMESTER – VI

ELECTIVE - II

MANAGEMENT INFORMATION SYSTEM

Sub Code: BCA - 607 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Concept of System, Types of Systems - Open, Closed, Deterministic, Probabilistic, etc Relevance of choice of System in MIS, Definition; Quality of Information; Value of Information; Information Needs of Manager at different Levels, Systems and Information Systems, System Development Life Cycle, System Analysis, Design and Implementation

Definition; Integrated System; MIS Vs Data Processing MIS and Other Academic Disciplines; Structure of MIS based on Management Activities and Functions; System Concepts of MIS

UNIT 2

Control on Systems; Feedback Control; Law of Requisite Variety; Management Control through Reporting, Newell-Simon Model; Limits on human Information Processors; Characteristics of Human Information Processing; Performance, Information for Financial Marketing Inventory Control; Production and Personal Functions

UNIT 3

Prototyping; Life-Cycle Approach; Project Management; Case Studies, Decision Making Phase; Concepts of Decision Making; Decision Supports System; Difference between MIS and DSS. Choice of appropriate IT systems – Database, Data warehousing & Data mining Concepts, Centralized and Distributed Processing

UNIT 4

Modeling Process; Information need for different phases and decision making Sensitivity Analysis; Static and Dynamic Models; Simulation; Operations Research Techniques;

Heuristic Programming Case Studies, Characteristics; Software and Hardware; Integrated EIS and DSS; EIS Implementation

Suggested Readings:

1. Management Information System - Gorden Devis; Margareth H Oison
2. Information Systems for Modern Management – Robert Murdick; Joel E Ross
3. Decision Support and Expert Systems – Efraim Turban
4. Management Information System- WS Javadekar- Tata Magraw Hill Publication.

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SEMESTER – VI

ELECTIVE - II

DATAWAREHOUSE AND DATA MINNING

Sub Code: BCA - 608 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Need for data warehouse, definition, goals of data warehouse, Data-Mart, Data Warehouse, architecture, extract and load process, clean and transform data, star, snowflake and galaxy schemas for multidimensional databases, fact and dimension data, Designing fact tables, Partitioning, partitioning strategy– horizontal partitioning, vertical partitioning.

UNIT 2

Data warehouse and OLAP technology, multidimensional data models and different OLAP operations, OLAP Server : ROLAP, MOLAP and HOLAP Data warehouse implementation, efficient computation of data cubes, processing of OLAP queries, indexing OLAP data

UNIT 3

Data Preprocessing, data integration and transformation, data reduction, Discretization and concept Hierarchy Generation, Data mining primitives, Types of Data Mining, Data Mining query language, Architectures of data mining Data generation & Summarization based characterization, Analytical characterization, Mining class comparisons, Mining descriptive statistical measures in large databases Mining Association Rules in large databases : Association rule mining, single dimensional, association rules from Transactional DBS, Multi level association rules from transaction DBS, multidimensional association rules from relational DBS and DWS, Correlation analysis, Constraint based association mining

UNIT 4

Classification and Prediction : Classification by decision tree induction, Back propagation, Bayesian classification, classification based in association rules, Prediction, classifier accuracy, Cluster analysis, partitioning and hierarchical methods, Denrity based methods, Grid based methods, web mining, Temporal and spatial data mining

Suggested Readings :

1 WHInmon : Building Data Ware House, John Wiley & Sons
2 S Anahory and D Murray : Data Warehousing, Pearson Education, ASIA
3 Jiawei Han & Micheline Kamber : Data Mining - Concepts & Techniques, Harcourt India Pvt Ltd (Morgan KaufmannPublishers)
4 Michall Corey, M Abbey, I Azramson & Ben Taub : Oracle 8i Building Data Ware Housing, TMH

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SEMESTER – VI
ELECTIVE - II

ENTERPRISE RESOURCE PLANNING

Sub Code: BCA - 609 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Enterprise Resource Planning –Introduction, What is ERP? Need of ERP, Advantages of ERP, Growth of ERP, ERP and Related Technologies Business process Reengineering (BPR), Management Information System (MIS), Decision Support Systems (DSS), Executive Support Systems (ESS), Data Warehousing, Data Mining, Online Analytical Processing (OLTP), Supply Chain Management (SCM), Customer Relationship, Management (CRM) (12)

UNIT 2

ERP modules & Vendors, Finance, Production planning, control & maintenance, Sales & Distribution, Human Resource Management (HRM), Inventory Control System, Quality Management, ERP Market,

UNIT 3

ERP Implementation Life Cycles, Evaluation and selection of ERP package, Project planning, Implementation team training & testing, End user training & Going Live Post Evaluation & Maintenance

UNIT 4

ERP Case Studies, Post implementation review of ERP Packages in Manufacturing, Services, and other Organizations.

Books Recommended:-

Enterprise Resource Planning - Alexis Leon
ERP Ware: ERP Implementation Framework –
VK Garg & NK Venkitakrishnan
ERP: By Leon, ERP Concepts and Planning - Garg & Venkitakrishnan

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SEMESTER – VI

ELECTIVE - III

NET FRAMEWORKS

Sub Code: BCA - 610 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Introduction , Basic Concepts and a Simple Application , Using Variables, Constants, Functions , Processing Decisions , Looping Structures and Lists , Sub Procedures, Function Procedures, Modules , Arrays, Structures, Collections

UNIT II

Windows Forms, Adding Controls, Adding an Event Handler, Adding Controls at Runtime
Attaching an Event Handler at Runtime, Menu , Multiple Document Interface, Dialog Form ,Form Inheritance, Tab-Control, Anchoring Controls, Changing the Startup Form, ListView , TreeView imageList Context Menu, TreeView, Creating Controls at run time, Creating a User Control, adding Functionality, Writing a Custom Control, Testing the Control

UNIT III

ADONET Architecture, ConnectionObject, Connection String, CommandObject, DataReaders, DataSets and DataAdapters, DataTable, DataColumn, DataRow, Differences between DataReader Model and DataSet Model, DataViewObject, Working with SystemDataOleDb, Working with SQLNET, Using Stored Procedures, Working with OdbcNET, Using DSN Connection

UNIT IV

Creating Distributed Web Applications, XML and ADONET, Graphics, Printing, Reporting

Text Book:

1 Visual Basicnet- A Beginner‘s Guide: Kent, Jeffrey TMH

Reference Books:

1 “Database Programming in VBNET”, Chittibabu Govindarajulu, Pearson

2 “Understanding NET”, Chappell, David, Addison Wesley, 2006

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SEMESTER – VI

ELECTIVE - III

ADVANCED JAVA

Sub Code: BCA - 611 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script XML : Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors : DOM and SAX Review of Applets, Class, Event Handling, AWT Programming

UNIT 2

Introduction to Swing : Applet Handling Swing Controls like Icons – Labels– Buttons – Text Boxes– Combo– Boxes – Tabbed Pains – Scroll Pains – Trees– Tables Differences between AWT Controls & Swing Controls Developing a Home page using Applet & Swing Java Beans : Introduction to Java Beans, Advantages of Java Beans, BDK Introspection, Using Bound properties, Bean info Interface, Constrained properties Persistence, Customizers, Java Beans API

UNIT 3

Introduction to Servelets : Lifecycle of a Serverlet, JSDK The Serverlet API, The javaxservelet Package, Reading Servelet parameters, Reading initialization parameters The Javaxservelet HTTP package, Handling HttP Request & Responses, Using Cookies-session Tracking, Security Issues Introduction to JSP, The Problem with Servelet The Anatomy of a JSP Page, JSP Processing JSP Application Design With MVC Setting Up and JSP Environment : Installing the Java Software Development, Kit, Tomcat Server & Testing Tomcat

UNIT 4

JSP Application Development : Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing– Displaying Values Using an Expression to

Set an Attribute, Declaring variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages– Sharing Session and Application Data – Memory Usage Considerations Database Access Database Programming using JDBC Studying Javaxsql* package Accessing a Database from a JSP Page Application– Specific Database Actions Deploying JAVA Beans in a JSP Page Introduction to Struts framework

Suggested Readings :

1 Dietel and Nieto : Internet and World Wide Web – How to Program? PHI/Pearson Education Asia
2 Patrick Naughton and Herbert Schildt : The Complete Reference Java, Latest Edition, Tata Mc-Graw Hill
3 Hans Bergstan : Java Server Pages
4 Bill Siggelkow, S P D O' Reilly : Jakarta Struts, Cookbook
5 Murach : Murach's beginning JAVA JDK 5, SPD
6 Wang-Thomson : An Introduction to Web Design and Programming
7 Knuckles : WEb Applications Technologies Concepts-John Wiley
8 Sebesta : Programming world wide web, Pearson
9 Building Web Applications - NIIT, PHI
10 Bai/Ekedaw-Thomas : Web Warrior Guide to Web Programming
11 Jon Duckett : Beginning Web Programming, WROX
12 Pekowsky, Java Server Pages, Pearson

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SEMESTER – VI

ELECTIVE - III

LINUX OPERATING SYSTEM

Sub Code: BCA - 612 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Introduction to O.S., History of Linux, Features of Linux, installing requirements, basic architecture of Unix/Linux system, Linux File System, Security In Linux, Kernal, Shells (understanding shell)

UNIT 2

Linux Process and Thread Management, Linux Processes, Linux Threads Linux, Concurrency Mechanisms, Pipes, Messages, Shared Memory, Semaphores, Signals, Primitives, Mutual Exclusion Lock, Semaphores, Readers/Writer Lock, Condition Variables, Linux Memory Management, Paging System, Data Structures, Page Replacement, Kernel Memory Allocator, Linux Memory Management, Linux Virtual Memory, Virtual Memory Addressing, Page Allocation, Page Replacement Algorithm, Kernel Memory Allocation

UNIT 3

Commands for files & directories: cd, ls, cp, md, rm, mkdir, rmdir, more, less Creating and viewing files using cat File comparisons Disk related commands: checking disk free spaces Processes in linux, process fundamentals, connecting processes with pipes, redirecting i/p o/p, background processing, managing multiple processes Manual help background process: changing process priority, scheduling of processes at command, batch commands, kill, ps, who, sleep Printing commands, grep, fgrep, find, sort, cal, banner, touch, file File related commands ws, sat, cut, grep, dd Mahtematical commands bc, expr, factor, Editor vi, joe, vim editor.

UNIT 4

Shell Programming (SP) 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, use of grep in shell, awk, programming.

Test Books

1. UNIX, concepts and applications, Sumitabha Das
2. Operating systems, Concept and design, Milenkovic
3. Unix Programming environment, Kernighan & R. Pike
4. Operating System William Stallings.
5. Linux Programming Unleashed.

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SEMESTER – VI

ELECTIVE - III

ARTIFICAL INTELLIGENSE

Sub Code: BCA - 613 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

Problem solving
State space search; Production systems, search space control: depth-first, breadth-first search, heuristic search - Hill climbing, best-first search, branch and bound Problem Reduction, Constraint Satisfaction End, Means-End Analysis

UNIT 2

Knowledge Representation
Predicate Logic: Unification, modus pones, resolution, dependency directed backtracking

Structured Knowledge Representation: Semantic Nets: slots, exceptions and default frames, conceptual dependency, scripts

UNIT 3

Handling uncertainty
Non-Monotonic Reasoning, Probabilistic reasoning, use of certainty factors, fuzzy logic

Learning
Concept of learning, learning automation, genetic algorithm, learning by inductions, neural nets

UNIT 4

Expert Systems
Need and justification for expert systems, knowledge acquisition, Case studies: MYCIN, RI

Text Books:

1 Rich, Knight, Nair, " Artificial Intelligence", TMH, 3rd Ed,
2 Dan W Patterson "Introduction to Artificial Intelligence and Expert Systems",
3 NJ Nilsson, "Principles of AI", Narosa Publ House, 1990

Reference Books:

1. Peter Jackson, "Introduction to Expert Systems", AWP, MA, 1992
2. RJ Schalkoff, "Artificial Intelligence - an Engineering Approach", McGraw Hill Int Ed, Singapore, 1992
3. M Sasikumar, S Ramani, "Rule Based Expert Systems", Narosa Publishing House, 1994

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SEMESTER – VI

ELECTIVE - III

ADVANCE WEB TECHNOLOGY

Sub Code: BCA - 614 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT I

INTRODUCTION
History of the Internet and World Wide Web – HTML 4 protocols – HTTP, SMTP, POP3, MIME, IMAP Introduction to JAVA Scripts – Object Based Scripting for the web Structures – Functions – Arrays – Objects

UNIT II

DYNAMIC HTML
Introduction – Object refers, Collectors all and Children Dynamic style, Dynamic position, frames, navigator, Event Model – On check – On load – Onenor – Mouse rel – Form process – Event Bubblers – Filters – Transport with the Filter – Creating Images – Adding shadows – Creating Gradients – Creating Motion with Blur – Data Binding – Simple Data Binding – Moving with a record set – Sorting table data – Binding of an Image and table

UNIT 3

Audio and video speech synthesis and recognition - Electronic Commerce – E-Business Model – E- Marketing – Online Payments and Security – Web Servers – HTTP request types – System Architecture – Client Side Scripting and Server side Scripting – Accessing Web servers – IIS – Apache web server

UNIT 4

Database, Relational Database model – Overview, SQL – ASP – Working of ASP – Objects – File System Objects – Session tracking and cookies – ADO – Access a

Database from ASP – Server side Active-X Components – Web Resources – XML – Structure in Data – Name spaces – DTD – Vocabularies – DOM methods

Introduction – Servlet Overview Architecture – Handling HTTP Request – Get and post request – redirecting request – multi-tier applications – JSP – Overview – Objects – scripting – Standard Actions – Directives

TEXT BOOK

1 Deitel & Deitel, Goldberg, "Internet and world wide web – How to Program", Pearson Education Asia, 2001

REFERENCES

1 Eric Ladd, Jim O' Donnel, "Using HTML 4, XML and JAVA", Prentice Hall of India – QUE, 1999
2 Aferganatel, "Web Programming: Desktop Management", PHI, 2004
3 Rajkamal, "Web Technology", Tata McGraw-Hill, 2001

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SEMESTER – VI

ELECTIVE - III

DIGITAL IMAGE PROCESSING

Sub Code: BCA - 615 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**

UNIT 1

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

UNIT 2

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

UNIT 3

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

UNIT 4

IMAGE COMPRESSION

Lossless compression: Variable length coding – LZW coding – Bit plane coding-predictive coding-DPCM, Lossy Compression: Transform coding – Wavelet coding –

Basics of Image compression standards: JPEG, MPEG,Basics of Vector quantization

IMAGE SEGMENTATION AND REPRESENTATION

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

Text Books

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

REFERENCES

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

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SEMESTER – VI

MAJOR PROJECT

Sub Code: BCA - 616 **Credits: 03**

Total Marks: 100 **Minimum Pass Marks: 30%**

Internal Assessment: 40 MARKS **University Examination: 60 Marks**