

Study & Evaluation Scheme

of

Bachelor of Computer Applications (BCA)

[Applicable w.e.f. Academic Session 2011-12 till revised]



TEERTHANKER MAHAVEER UNIVERSITY

N.H.-24, Delhi Road, Moradabad, Uttar Pradesh-244001

Website: www.tmu.ac.in



TEERTHANKER MAHAVEER UNIVERSITY

(Established under Govt. of U. P. Act No. 30, 2008)

Delhi Road, Bagarpur, Moradabad (U.P)

Study & Evaluation Scheme of Bachelor of Computer Applications SUMMARY

Programme	: BCA
Duration	: Three year full time (Six Semesters)
Medium	: English
Minimum Required Attendance	: 75 %
Credits	:
Maximum Credits	: 201
Minimum Credits required for the degree	: 195
Assessment	:

Internal	External	Total
30	70	100

Internal Evaluation (Theory Papers)

Class Test I	Class Test II	Class Test III	Assignment(s)	Other Activity (including attendance)	Total
Best two out of the three					
10	10	10	5	5	30

Evaluation of Practical/ Dissertations & Project Reports

Internal	External	Total
50	50	100

Duration of Examination

External	Internal
3 hrs.	1 ½ hrs

To qualify the course a student is required to secure a minimum of 40% marks in aggregate including the semester end examination and teachers continuous evaluation.(i.e. both internal and external).

A candidate who secures less than 40% of marks in a course shall be deemed to have failed in that course. The student should have secured at least 50% marks in aggregate to clear the semester. In case a student has secured more than 40% in each course, but less than 50% overall in a semester, he/she shall re-appear in courses where the marks are less than 50% to achieve the required aggregate percentage (50%) in the semester.

Question Paper Structure

1. The question paper shall consist of eight questions. Out of which first question shall be of short answer type (not exceeding 50 words) and will be compulsory. Question No. 1 shall contain 8 parts representing all units of the syllabus and students shall have to answer any five (weightage 4 marks each).
2. Out of the remaining seven questions, student shall be required to attempt any five questions. There will be minimum one and maximum two questions from each unit of the syllabus. The weightage of Question No. 2 to 8 shall be 10 marks each.

Study & Evaluation Scheme
Programme: BCA
Semester-I

S. No.	Course Code	Subject	Periods			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	BCA101	Mathematics -I	6	-	-	6	30	70	100
2	BCA102	Principles of Economics	6		-	6	30	70	100
3	BCA103	Computer Fundamentals & Programming Concepts	6		-	6	30	70	100
4	BCA104	Principles of Management	6		-	6	30	70	100
5	BCA105	Environment Studies	3		-	3	30	70	100
6	BCA106*	Foundation English I	2	1	2	3	30	70	100
7	BCA151	MS Office and Internet-Lab	-	-	4	2	50	50	100
8	BCA152	Programming Concept- Lab	-	-	6	3	50	50	100
Total			29	-	12	35	280	520	800

*Applicable from next session i.e. 2012-13

Semester-II

S. No.	Course Code	Subject	Periods			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	BCA201	Mathematics- II	6	-	-	6	30	70	100
2	BCA202	Programming in 'C'	6	-	-	6	30	70	100
3	BCA203	Operating System	5	-	-	5	30	70	100
4	BCA204	Digital Electronics	5	-	-	5	30	70	100
5	BCA205	Introduction to Programming Logic Formation	5	-	-	5	30	70	100
6	BCA206	Foundation English-II	2	-	2	3	30	70	100
7	BCA251	'C' Language- Lab	-	-	6	3	50	50	100
8	BCA252	Logic Formation- Lab	-	-	4	2	50	50	100
Total			29	-	12	35	280	520	800

Semester-III

S. No.	Course Code	Subject	Periods			Credits	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	BCA301	Computer Based Numerical Analysis and Statistical Techniques	6	-	-	6	30	70	100
2	BCA302	Data Structure Using 'C'	6	-	-	6	30	70	100
3	BCA303	Computer Organization & Architecture	6	-	-	6	30	70	100
4	BCA304	Production and Operations Management	6	-	-	6	30	70	100
5	BCA305	Professional Writing	2	-	2	3	30	70	100
6	BCA351	Data Structure- Lab Using 'C'	-	-	6	3	50	50	100
7	BCA352	CBNST & CO- Lab	-	-	4	2	50	50	100
Total			26	-	12	32	250	450	700

Remark: Any type of certification like CISCO/ SUN/ MCSE/MCSD/ORACLE etc shall be given credits based on the recommendation of the concerned Board of Studies and its approval by the Academic Council.

Semester-IV

S. No.	Course Code	Subject	Periods			Credits	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	BCA401	Computer Oriented Financial Accounting	6	-	-	6	30	70	100
2	BCA402	Software Engineering	6	-	-	6	30	70	100

3	BCA403	Database Management System	5	-	-	5	30	70	100
4	BCA404	OOPs and C++	6	-	-	6	30	70	100
5	BCA405	Management Information System	4	-	-	4	30	70	100
6	BCA406	Technical Communication	2	-	2	3	30	70	100
7	BCA451	Database Management System-Lab	-	-	4	2	50	50	100
8	BCA452	OOPs and C++ Lab	-	-	6	3	50	50	100
Total			29	-	12	35	280	520	800

Semester-V

S. No.	Course Code	Subject	Periods			Credits	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	BCA501	LINUX Internals	5	-	-	5	30	70	100
2	BCA502	VB .Net	6	-	-	6	30	70	100
3	BCA503	Computer Networks	5	-	-	5	30	70	100
4		Elective*	5	-	-	5	30	70	100
5	BCA507	Computer Graphics	5	-	-	5	30	70	100
6	BCA508	Business Communication	2	-	2	3	30	70	100
7	BCA551	Industrial Training	-	-	4	2	50	50	100
8	BCA552	VB .Net- Lab	-	-	4	2	50	50	100
9	BCA553	LINUX Internals and Computer Graphics- Lab	-	-	2	1	50	50	100
Total			28	-	12	34	330	570	900

Elective*-Select one elective course

BCA504	BCA505	BCA506
Introduction to Operation Research	Graph Theory	Discrete Mathematics

Semester-VI

S. No.	Course Code	Subject	Periods			Credits	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	BCA601	Web Technologies	6	-	-	6	30	70	100
2	BCA602	Internet and Java Programming	6	-	-	6	30	70	100
3	BCA603	Multimedia and Animation	6	-	-	6	30	70	100
4	BCA604	Communication Technique	2	-	2	3	30	70	100
5	BCA651	Web Technologies & Java Programming- Lab	-	-	6	3	50	50	100
6	BCA652	Multimedia and Animation-Lab	-	-	6	3	50	50	100
7	BCA653	Project Work	-	-	6	3	50	50	100
Total			20	-	20	30	270	430	700

Note: L – Lecture
1L = 1Hr

T- Tutorial
1T= 1 Hr

P- Practical
1P=1 Hr

C-Credits

1C = 1Hr of Theory Paper
= 2 Hrs of Practical/Tutorial

BCA- Semester I MATHEMATICS- I

Course Code: BCA101

L-6, T-0, P-0, C-6

Course Contents

Unit I

Matrices: Introduction, types of matrices such as square, row, Column, diagonal, identity, symmetric, singular, non-singular Matrices. Addition, subtraction, multiplication of matrices, adjoint of a matrix. **(Lecture 08)**

Unit II

Inverse of matrix, Determinants & their properties. Solution of simultaneous linear equations by Matrix Method & Cramer's rule. **(Lecture 08)**

Unit III

Differentiation of functions, derivatives of some common functions, polynomials, rationals, exponential, logarithmic & trigonometric functions. **(Lecture 08)**

Unit IV

Integration as a inverse process of differentiation, integration of simple functions, method of change of variable & substitution for integrals. Definite integrals. **(Lecture 08)**

Unit V

Sets & subsets, finite, infinite sets, equal sets, null sets, proper subset, universal set, singleton set. Algebra of sets-Union, intersection, complementation. Common application of algebra of sets. **(Lecture 08)**

Text Books:

1. Gorakh Prashad, *Text Book on Differential Calculus*, Porthishala
2. Vasistha A. R., *Vector Algebra*, Krishna Publicaions
3. Mittal & Mittal, *Co-ordinate Geometry*, Pragati Prakashan

Reference Books:

1. Seth M.Ray, *Elements of Matrix and Determinants*
2. Vasistha A. R., *Matrices*, Krishna Publications
3. Shanti Narayan, *Differential Calculus*, S.Chand
4. Loney S. L., *The elements of Coordinate Geometry*, Scholarly Publishing Office University of Michigan Library.

*Latest editions of all the suggested books are recommended.

Semester I

PRINCIPLES OF ECONOMICS

Course Code: BCA102

L-6,T-0, P-0,C-6

Course Contents

Unit 1

Economics: Definition, Nature and Scope of Economics; Economics as an art or Science; Relevance of Economics in Business Management; Utility analysis, Marginal Theory of utilities and Equi-marginal theory of utilities. **(Lecture 08)**

Unit II

Demand: Meaning of demand, Factors affecting demand, Law of demand, Demand schedule, Elasticity of Demand, Types & Measurement of Elasticity, Indifference Curve Analysis, Consumer's Equilibrium & Consumer's Surplus, Price, Income and Substitution Effects. CASE STUDY based on law of demand. **(Lecture 08)**

Unit III

Production: Meaning and Analysis, Production function, Laws of Returns, Equal Product Curve (Isoquants) and Producer's equilibrium; Cost-meaning & types. **(Lecture 08)**

Unit IV

Market analysis: Nature of market, Types of markets and their characteristics. Pricing under different market structures- Perfect, Monopoly, oligopoly and Monopolistic competition, Price discrimination under monopoly competition. CASE STUDY based on Pricing Under Monopoly Competition. **(Lecture 08)**

Unit V

Factor Pricing: Factor pricing v/s product pricing, theories of rent, interest, wages and profit. **(Lecture 08)**

Text Books:

1. Adhikari M, *Management Economics*
2. Gupta G.S., *Managerial Economics*, Tata McGraw Hill
3. Lal S.M., *Principles of Economics*

Reference Books:

1. Vaish & Sunderm, *Principles of Economics*
2. Mehta P.L., *Management Economics*
3. Dwivedi D.N., *Principles of Economics*

*Latest editions of all the suggested books are recommended.

Semester I

COMPUTER FUNDAMENTALS AND PROGRAMMING CONCEPTS

Course Code: BCA103

L-6, T-0, P-0, C-6

Course Contents

Unit I: Introduction and Definition of Computer: Computer Generation, Characteristics of Computer, Advantages and Limitations of a computer, Classification of computers, Functional components of a computer system (Input, CPU, Storage and Output Unit), Types of memory (Primary and Secondary) Memory Hierarchy. Hardware: a) Input Devices- Keyboard, Mouse, Scanner, Bar Code Reader b) Output Devices – Visual Display Unit (VDU), Printers, Plotters etc. Software: Introduction, types of software with examples, Introduction to languages, Compiler, Interpreter and Assembler. Number System: Decimal, Octal, Binary and Hexadecimal Conversions, BCD, ASCII and EBCDIC Codes. **(Lecture 08)**

Unit II: MS – DOS: Getting Started on DOS with Booting the System, **Internal Commands:** CHDIR(CD), CLS, COPY, DATE, DEL(ERASE), DIR, WILD CARD CHARACTER, EXIT, MKDIR(MD), PROMPT, REM, RENAME(REN), RMDIR(RD), TIME, TYPE, VER, VOL, **External Commands:** APPEND, ATTRIB, CHKDSK, COMMAND, DOSKEY, EDIT, FORMAT, HELP, LABEL, MORE, REPLACE, RESTORE, SORT, TREE, UNDELETE, UNFORMAT, XCOPY. **(Lecture 08)**

Unit III: MS Word: Starting MS WORD, Creating and formatting a document, Changing fonts and point size, Table Creation and operations, Autocorrect, Auto text, spell Check, Word Art, Inserting objects, Page setup, Page Preview, Printing a document, Mail Merge. **(Lecture 08)**

Unit IV:

MS Excel: Starting Excel, Work sheet, cell inserting Data into Rows/ Columns, Alignment, Text wrapping, Sorting data, Auto Sum, Use of functions, Cell Referencing form, Generating graphs, Worksheet data and charts with WORD, Creating Hyperlink to a WORD document, Page set up, Print Preview, Printing Worksheets.

MS Power Point: Starting MS–Power Point., Creating a presentation using auto content Wizard, Blank Presentation, creating, saving and printing a presentation, Adding a slide to presentation, Navigating through a presentation, slide sorter, slide show, editing slides, Using Clipart, Word art gallery, Adding Transition and Animation effects, setting timings for slide show, preparing note pages, preparing audience handouts, printing presentation documents. **MS – Access:** creating table and database. **(Lecture 08)**

Unit V: Data types, Variables, Constants, Keywords and Identifiers, Operators and Expression, Type Conversion, Arithmetic Expression, Logical Expression Operator Precedence, Sequencing, Applying if statement, if....else statements, nested if....else and else if ladder statements. Program Loops and Iteration: Use of Loops (while, do and for), Nested Loops. **(Lecture 08)**

Text Books

1. Sinha P.K., *Computer Fundamentals*, BPB Publishing.
2. Bill Bruck., *The Essentials Office 2000 Book*, BPB Publishing.
3. Kanitkar Yashwant, *Let Us C*, BPB Publishing.

Reference Books

1. Leon A. & Leon M., *Introductions to Computers*, Vikas Publications.
2. Balaguruswamy E., *Programming in ANSI C*, Tata McGraw Hill.
3. Peter Norton"s, *Introductions to Computers*, Tata McGraw Hill.

4. Raja Raman V., *Fundamentals of Computers*, Prentice Hall of India.
5. Joyce Cox & Polly Urban, *Microsoft Office*, Galgotia Publishing

*Latest editions of all the suggested books are recommended.

Semester I
PRINCIPLES OF MANAGEMENT

Course Code: BCA104

L-6 T-0, P-0, C-6

Course Contents

Unit I

Introduction: Concepts, Nature, Scope, Functions and Significance of Management, Evolution Management thought, Contribution Taylor, Weber and Fayol to Management, CASE STUDY based on Scientific Management. **(Lecture 08)**

Unit II

Planning: Concept, Objectives, Nature, Limitation, Process of Planning, Importance, Forms, Techniques and Process of decision making, CASE STUDY based on Decision Making. **(Lecture 08)**

Unit III

Organizing: Concept, Objectives, Nature of Organizing, Types of Organization.

Communication: Concept, Process and Barriers of Communication, Case Study based on Communication Barriers. **(Lecture 08)**

Unit IV

Staffing: Concept, Recruitment & Selection, Training & Development.

Directing: Concept, Principles & Techniques of directing. **(Lecture 08)**

Unit V

Leadership: Meaning, Importance, Styles, Functions of good leader, Case Study based on Leadership. **Motivation:** Concept, Maslow Motivational Theory. **Controlling:** Concept, Principles, process and techniques of controlling. **(Lecture 08)**

Text Books

1. Prasad L.M., *Principles and Practice of Management*, Sultan Chand
2. Murugan and Shaktivel, *Management Principles and Practices*, New Age

Reference Books

1. Srivastava & Chunawalla, *Management Principles and Practices*, Macmillan
2. Koontz, *Principles of Management*, Tata McGraw Hill, 2008
3. Robbins & Coulter, *Management*, Prentice Hall of India.

*Latest editions of all the suggested books are recommended.

Semester – I
ENVIRONMENT STUDIES

Course Code: BCA105

L-3, T-0, P-0, C-3

Course Contents

Unit I

Introduction: Meaning, definition and scope of Ecology. Ecosystem: - Definition, structure and function. Food chain & Food Web. Ecological Pyramids. **(Lecture 08)**

Unit II

Harnessing Resources: Conventional Energy Sources: - Fossil fuel, Nuclear Energy. Non-Conventional Energy Sources:-Solar, Wind, Water, Biomass and Biogas, Ocean thermal energy Case study on Solar Energy. **(Lecture 08)**

Unit III

Environmental Pollution and Global Issues: Air, Water, Soil & Noise pollution- sources and consequences. Solid waste management. Green house effect, Global Warming, Ozone layer depletion and its effect. Case study on global warming. **(Lecture 08)**

Unit IV

Human Population: Population growth and its impact, Urbanization, Control Measures. **(Lecture 08)**

Unit V

Environment Education and Protection: Meaning, Need and objectives. Role of IT in Environment & Human health. The Environment (Protection) Act 1986. Case study on violation of Environment Protection Act. **(Lecture 08)**

Text Books:

1. Agarwal, K.C., *Environment Biology*, Nidi Publ. Ltd. Bikaner, 2001
2. Joseph Benny, *Environmental Studies*, Tata McGraw Hill, 2005
3. Bharucha Erach, *The Biodiversity of India*, Mapin Publishing Pvt. Ltd., Ahmedabad

Reference Books:

1. Brunner R.C., *Hazardous Waste Incineration*, McGraw Hill Inc., 1989
2. Clark R.S., *Marine Pollution*, Clanderson Press, Oxford (TB)

*Latest editions of all the suggested books are recommended.

FOUNDATION ENGLISH - I

Course code: BCA106

(Common with EHM101/BPH105/BED105/BAL101/AR107/BHM101/BFS106//BBA106/ BCH106/ BFA103)

L	T	P	C
2	0	2	3

Course Contents:

Unit I

Functional Grammar: Patterns & Parts of speech Subject, Predicate, Noun, Pronoun, Adjective, Adverb, Verb, Verb phrases, Conjunction, Interjection. **(10 Hours)**

Unit II

Vocabulary: Word formation, Prefix, Suffix, Compound words, Conversion, Synonyms, Antonyms, Homophones and Homonyms, How to look up a dictionary. **(10 Hours)**

Unit III

Communication: Meaning & importance of communication, Barriers to effective communication, Channels of communication, Language as a tool of communication. **(10 Hours)**

Unit IV

Requisites of Sentence writing: Fragmented sentences, A good sentence, expletives, Garbled sentences, Rambling sentences, Loaded sentences, Parallel Comparison, Squinting construction, Loose & periodic sentences. **(10 Hours)**

Text Books:

1. Martin & Wren - *High School English Grammar & Composition*, S.Chand & Co. Delhi.
2. Lewis Norman - *Word Power made easy*, W.R.Goyal. Publication & Distributors Delhi.
3. Better Your English- A Workbook for 1st year Students- Macmillan India, New Delhi.

Reference Books:

1. Raman Meenakshi & Sharma Sangeeta, *Technical Communication-Principles & Practice* – O.U.P. New Delhi. 2007.
2. Mohan Krishna & Banerji Meera, *Developing Communication Skills* – Macmillan India Ltd. Delhi.
3. Rosen Blum M., *How to Build Better Vocabulary* – Bloomsbury Publication. London.

NOTE:

This syllabus has been designed to improve the oral and written communication skills of students. The faculty members should put emphasis on practical (oral) activities for generating students' interest in language learning.

* Latest editions of all the suggested books are recommended.

Semester – I
MS OFFICE AND INTERNET- LAB

Course Code: BCA151

L-0, T-0, P-4, C-2

Course Contents

MS-WORD

Creating, Editing, Formatting: Font name, size, color, alignment, changing, paragraph settings, change case, spell checker, Mail Merge, Creating Tables, editing tables, alignment settings in tables

MS-EXCEL

Creating, Editing, Formatting: font name, size, color, alignment, changing, entering data, Sorting Data, Inserting, renaming and deleting Sheet, Inserting row, column, cell ,picture, background, graph, symbol, hyperlink ,object, diagram.

MS-POWERPOINT

Creating, Editing, Formatting: font name, size, color, alignment, changing, Inserting table,picture, background, graph, symbol, hyperlink, object, diagram.

MS-ACCESS

Creating database and editing data base

Semester – I
PROGRAMMING CONCEPT-LAB

Course Code: BCA152

L-0, T-0, P-6, C-3

Course Contents

Concepts based on Operating System (Windows)

Windows Operation – Such as Setting, color, background, cut, copy, paste.

Internet Lab

Programming Concepts-

Programming Concepts Based on simple arithmetic operations and logical operations. Decision Control, Loop Control and case control with program.

Semester II MATHEMATICS -II

Course Code: BCA201

L-6, T-0, P-0, C-6

Unit I

Integration of rational and irrational functions, Reduction formulae. (Lecture 08)

Unit II

Infinite series, convergence of series, series of positive terms, Comparison tests, Cauchy's nth root test, D'Alembert's ratio test, Raabe's test, Logarithmic test. (Lecture 08)

Unit III

Limits and Continuity, simple Applications of mean value theorem, Maxima & minima, Indeterminate forms. (Lecture 08)

Unit IV

Successive differentiation, Leibnitz theorem, Alternative series and Maclaurin's series for $\sin x$, $\cos x$, $\log(1+x)$, $(1-x)^m$ (Lecture 08)

Unit V

Differential equations of 1st order by method of separation of variables, homogeneous, non homogeneous equations, linear equations. (Lecture 08)

Text Books:

1. Gorakh Prashad, "*Text Book on Integral Calculus*"
2. Vasistha A. R. & Hemlata Vasistha, "*Elementary Real Analysis*"
3. Ray and Seth, "*Sequence, series and summability*"

Reference Books:

- | | | |
|----------------------------------|---|---------------------------|
| 1. <i>Integral Calculus</i> | - | <i>Shanti Narayan</i> |
| 2. <i>Differential Equations</i> | - | <i>M. D. Raysinghania</i> |

*Latest editions of all the suggested books are recommended.

Semester II PROGRAMMING IN 'C'

Course Code: BCA202

L-6T-0, P-0, C-6

Course Contents

Unit I

Concept of C programming: History, Introduction of C programming language, Structure of C program, C character set, Data types, Variables, Constants, Keywords and Identifiers, Expression statements, Operators(Arithmetic, Logical, Relational, Assignment) (Lecture 07)

Unit II

Conditional Program: Execution, if statement, if.....else statements nested if.....else and else if ladder. Program Loops and Iteration, while loop, do loop and for loop, Nested Loops, Use of break, continue and goto statements, Applying switch statements, use of break and default with switch. (Lecture 08)

Unit III

Functions: Built-In and User Defined functions, Function Declaration, Definition and Function Calling, Parameter Passing (Call by Value and Call by Reference), Recursion, Pointers. (Lecture 09)

Unit IV

Arrays: Linear Arrays, Multidimensional Arrays, Passing Array to function, String Processing, Macros. (Lecture 08)

Unit V

Structure and Union: Definition, File Handling: Opening and Closing a data file, Read and Write Functions, different modes of files. (Lecture 08)

Text Books:

1. BalaguruswamyE., *Programming in ANSI C*, TMH
2. Kanitkar Yashwant, *Let Us C*, BPB
3. Kanitkar Yashwant, *Working With C*, BPB

References Books:

1. Yashwant Kanitkar, *Pointers in C*, BPB
4. Shaum's Series *Programming in C*, TMH
2. Forouzan, *Computer Science*, Thomson, Cengage

*Latest editions of all the suggested books are recommended.

Semester II

OPERATING SYSTEMS

Course Code: BCA203

L-5, T-0, P-0, C-5

Course Contents

Unit I

Introduction to the Operating System (OS), Types of OS: Batch System, Time Sharing System, Real Time System. Multi Programming, Distributed System, Functions and Services of OS.

(Lecture 08)

Unit II

Process Management: Process Concept, Process State, Process Control Block, Process Scheduling, CPU Scheduling - CPU Scheduling, Scheduling Criteria, Scheduling Algorithms, Preemptive & Non Preemptive Scheduling.

(Lecture 10)

Unit III

Deadlocks-System model, Characterization, Deadlock Prevention, Deadlock Avoidance and Detection, Recovery from deadlock.

(Lecture 09)

Unit IV

Memory Management: Logical Address, Physical Address Contiguous Allocation, External and Internal Fragmentation

(Lecture 06)

Unit V

Information Management: File Concept, Access Methods, Directory Structure. Device Management: Disk Structure, Disk Scheduling Algorithms.

(Lecture 06)

Text Books:

1. Silbershatz and Galvin," Operating System Concept", Addison Wesley, 2002.
2. *Nutt, G., "Operating Systems", Addison-Wesley.*
3. *Godbole Ahyut, "Operating System", PHI, 2003.*

Reference Books:

1. Flynn, Mchoes, "Understanding Operating System", Thomson Press, Third Edition, 2003
2. Tannenbaum,"Operating System Concept", Addison Weseley, 2002.
3. *Joshi, R. C. and Tapaswi, S., "Operating Systems", Wiley Dreamtech.*

*Latest editions of all the suggested books are recommended.

Semester II DIGITAL ELECTRONICS

Course Code: BCA204

L-5, T-0, P-0, C-5

Course Contents

Unit I

Number systems : Binary number system, Octal & Hexa-decimal number system, Conversion of Number System, r' s & (r-1)'s complement, Arithmetic operation on Binary numbers.

Unit II

Logic Gates: AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates.
Boolean Algebra: AND, OR, Inversion, Basic Boolean Law's, Demorgan's theorem, Minimization techniques: K -Map, Sum of Product & Product of Sum. **(Lecture 08)**

Unit III

Flip-flops: Types of Flip Flop: R-S, D, J-K, T, Master Slave, and State Realization of one Flip Flop Using Other Flip Flop. **(Lecture 08)**

Unit IV

Combinational circuits: Multiplexers, Demultiplexers, Decoders & Encoders, Half Adder, Full Adder, Half Subtractor, Full Subtractor. **(Lecture 08)**

Unit V

Registers and Counters: Shift Registers, Types of registers, Universal Shift Register with parallel load, Bi directional Shift register. **(Lecture 08)**

Text Book:

1. Morris Mano, *Digital Logic*, Prentice Hall of India.

Reference Books:

1. Taub & Schelling, *Digital Integrated Electronics*, McGraw-Hill International Edition
2. Charles H.Roth, Jr. *Fundamentals of Logic Design*, Jaico Publishing House, 2000.
3. Donald D.Givone, *Digital Principles and Design*, Tata McGraw-Hill, 2003.
4. Bartee, *Digital Computer Fundamentals*.

*Latest editions of all the suggested books are recommended.

Semester II

INTRODUCTION TO PROGRAMMING LOGIC FORMATION

Course Code: BCA205

L-5, T-0, P-0, C-5

Course Contents

Unit I

Introduction: Hardware, Software, Relationship between software & hardware, Word processor, Electronic spread sheets, Database system, Accounting packages, Utilities- File Management Utilities. Evolution of programming language, Classification of PL, features of good PL.

(Lecture 15)

Unit II

Computer Language: Definition of Machine Language, Assembly Language, High Level Language and Assembler. Generation of language & Basic input output System, Translation HLL to Machine Language. Compilers, Interpreters, Example of HLL, Characteristics of good language.

(Lecture 08)

Unit III

Planning the Computer Program: Developing of purpose of program planning, Algorithm, flowcharts: - flowcharts symbols, sample flowcharts, levels of flowcharts, Program Testing and program debugging.

(Lecture 08)

Unit IV

Elements of Programming Formulation: Body of program, data types, char, identifiers, constant variables, operation, Basic input & output instructions, control structure, if then else statements while statement, do statement, for statement, Switch, Break, Goto Statements.

(Lecture 10)

Unit V

Introduction of Edit and VI Editors: Introduction to editors, How to start Edit in windows, creating a text file, cursor movement keys.

(Lecture 08)

Text Books

1. Pearl Software, *Computer fundamental*, Khanna Publishers
2. Sinha P.K., *Computer Fundamental*, BPB
3. *Introduction to Computer Science*– IITL Education Solution Limited.

Reference Books

1. Bajpai S.K., *Introduction to Computers and C programming*, New Age
2. Peter Norton, *Introduction to Computers*, BPB
3. E-Balagurusamy, *Programming*, TMH

*Latest editions of all the suggested books are recommended.

Semester-II
FOUNDATION ENGLISH - II

Course code: BCA206

(Common with EHM 201/BPH206/BBA206/BHM201/AR207/BCH206/BFA203)

L	T	P	C
2	0	2	3

Unit I

Functional Grammar: Articles, Preposition, Tenses: Functions, Synthesis, Transformation, Spotting errors and correction of sentences. **(10 Hours)**

Unit II

Pre- Requisites of Technical written Communication: One word substitution, Spelling rules, Words often confused & misused, Phrases. **(10 Hours)**

Unit III

The Structure of sentences/ clauses: Adverb clause, Adjective clause, Noun clause. Sentences: Simple, Double, Multiple and complex, Transformation of sentences: simple to complex & vice versa, simple to compound & vice-versa, Interrogative to assertive & to negative & vice-versa. **(10 Hours)**

Unit IV

Technical Communication: Nature, Origin and Development, Salient features, Scope & Significance, Forms of Technical Communication, Difference between Technical Communication & General writing, Objective Style vs. Literary Composition. **(10 Hours)**

Text-Books:

1. Wren & Martin, *High School English Grammar & Composition* – S. Chand & Co. Delhi.
2. Raman Meenakshi & Sharma Sangeeta, *Technical Communication-Principles & Practice* – O.U.P. New Delhi. 2007.
3. Mitra Barum K., *Effective Technical Communication* – O.U.P. New Delhi. 2006.
4. Better Your English- A Workbook for 1st year Students- Macmillan India, New Delhi.

Reference Books:

1. Horn A.S., *Guide to Patterns & Usage in English* – O.U.P. New Delhi.

NOTE:

This syllabus has been designed to improve the oral and written communication skills of students. The faculty members should put emphasis on practical (oral) activities for generating students' interest in language learning.

*** Latest editions of all the suggested books are recommended.**

Semester II
'C' LANGUAGE- LAB

Course Code: BCA251

L-0, T-0, P-6, C-3

Course Contents

Core concepts of programming on data types, simple arithmetic and logical operation. Decision control, Iteration control, Sequencing, and case control.

Basic Input/output functions based on standard library.

Advanced concept based on array, strings, passing arrays to the functions, Call by value, call by reference, Recursion, structure, union passing structure to the functions, macros, DMA, and files.

Semester II
LOGIC FORMATION- LAB

Course Code: BCA252

L-0, T-0, P-4, C-2

Course Contents

Developing Flowcharts in MS Word, Mail Marge, Creating Tables, editing tables, alignment settings in tables

Creating, editing, formatting – font name, size, color, alignment, changing, entering data, Sorting Data, Inserting, renaming and deleting Sheet, Inserting row, column, cell ,picture, background, graph, symbol, hyperlink ,object, diagram.

MS-POWERPOINT

Creating, editing, formatting – font name, size, color, alignment, changing, Inserting table, picture, background, graph, symbol, hyperlink, object, diagram.

Design Algorithm for given problem and Implement in C Programming.

Edit Editor- Starting Edit Editor, Creating & Editing and Saving files in edit editor.

VI Editor- Starting VI Editor, Creating & Editing and Saving files in vi editor.

Semester III
COMPUTER BASED NUMERICAL ANALYSIS AND
STATISTICAL TECHNIQUES

Course Code: BCA301

L-6, T-0, P-0, C-6

Course Contents

Unit I

Solution of Systems of Linear Equations: Direct method, Gauss Jordan and Gauss Elimination methods, Pivoting, Iterative methods – Jacobi and Gauss Seidel methods. **(Lecture 08)**

Unit II

Solution of Systems of Nonlinear Equations: Bisection method, Regula -Falsi method, Newton-Raphson method, Rate of convergence. **(Lecture 08)**

Unit III

Interpolation: Finite difference, Newton's forward and backward interpolation formulae, Central difference formulae – Gauss forward and backward difference formulae, Newton's divided difference Formula, Lagrange's interpolation formula. **(Lecture 08)**

Unit IV

Numerical Integration and Differentiation: Trapezoidal and Simpson's rule. **(Lecture 08)**

Unit V

Statistical Methods: Measures of central tendency, Dispersion, Curve fitting by principle of least square methods. **(Lecture 08)**

Text Books:

1. Raman Raja, *Computer Oriented Numerical Methods*, Prentice Hall.
2. Grewal B. S, *Numerical Methods in Engineering and Science*, Khanna Publishers.
3. Gupta S. P., *Statistical Methods*, Sultan Chand.

Reference Books:

1. Gerald & Wheatley, *Applied Numerical Analyses*, PHI
2. Jain, Iyengar and Jain, *Numerical Methods for Scientific and Engineering Computations*, New Age International.
3. Veerarajan T. & Ramachandran T., *Theory and Problems in Numerical Methods*, Tata McGraw Hill.
4. Niyogi Pradip, *Numerical Analysis and Algorithms*, Tata McGraw Hill
5. Scheld Francis, *Numerical Analysis*, Tata McGraw Hill
6. Balaguruswamy, *Numerical Methods*, Tata McGraw Hill
7. Shastri, *Introductory Methods of Numerical Analysis*, Prentice Hall of India.

*Latest editions of all the suggested books are recommended.

Semester III
DATA STRUCTURE USING 'C'

Course Code: BCA302

L-6, T-0, P-0, C-6

Course Contents

Unit I

Introduction: Basic Terminology, Elementary Data Organization, Data Structure operations, Algorithm, Design and analysis, Complexity and Time-Space trade-off.

Arrays: Array Definition, Representation and Analysis, Single and Multidimensional Arrays, address calculation, application of arrays, Character String in C, Character string operation.

(Lecture 08)

Unit II

Stacks: Array Representation and Implementation of stack, Operations on Stacks: Push & Pop, Linked Representation of Stack, Operations Associated with Stacks, Application of stack: Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using Stack.

Queues: Array and linked representation and implementation of queues, Operations on Queue: Create, Add, Delete, Circular queue.

(Lecture 08)

Unit III

Linked list: Representation and Implementation of Singly Linked Lists, Traversing and Searching of Linked List, Overflow and Underflow, Insertion and deletion to/from Linked Lists, Insertion and deletion Algorithms, Doubly linked list, Linked List v/s Array.

(Lecture 08)

Unit IV

Sorting: Bubble Sort, Selection Sort Insertion Sort, Quick Sort, Merge Sort, and Heap Sort.

Searching: Sequential search, Binary search.

(Lecture 08)

Unit V

Trees: Basic terminology, Binary Trees, Binary tree representation, algebraic Expressions, Complete Binary Tree, Array and Linked Representation of Binary trees, Traversing Binary tree, Binary Search Trees.

(Lecture 08)

Text Books:

1. Lipschutz, *Data Structure*, Tata Mc Graw Hill
2. Tenenbaum et. al A.M., *Data Structures Using C & C++*, Prentice Hall of India.
3. Kanitkar Yashwant, *Data Structure Using C*, BPB
4. Salaria R.S., *Data Structure Using C*, Khanna Publishers

Reference Books:

1. Horowitz and Sahani, *Fundamentals of Data Structures*, Galgotia
2. Kruse et.al R., *Data Structures and Program Design in C*, Pearson Education
3. Cormen T. H., *Introduction to Algorithms*, Prentice Hall of India.
4. Loudon K., *Mastering Algorithms with C*, Shroff Publisher & Distributors
5. Bruno R Preiss, *Data Structures and Algorithms with Object Oriented Design Pattern in C++*, John Wiley & Sons Inc.
6. Adam Drozdek, *Data Structures and Algorithms in C++*, Thomson Asia
7. Sorenson Pal G., *An Introduction to Data Structures with Application*, Tata McGraw Hill.

*Latest editions of all the suggested books are recommended.

Semester III
COMPUTER ORGANIZATION AND ARCHITECTURE

Course Code: BCA303

L-6, T-0, P-0, C-6

Course Contents

Unit I

Basic Building Blocks: Half Adder, Full Adder, Subtractor, Decoder, Encoders, Multiplexer, Demultiplexer, Registers, Registers with parallel load **(Lecture 08)**

Unit II

Register Transfer and Micro operations

Register Transfer Language: Bus and Memory Transfer, Three State Bus Buffers, Memory Transfer, Arithmetic Micro operation(Binary Adder, Binary Adder-Subtractor, Binary Increment, Arithmetic Circuit), Logic Micro operations(List of logic operation), Shift Micro operations, Arithmetic Logic Shift Unit. **(Lecture 08)**

Unit III

Processor Design

Processor Organization: General register organization, Stack organization, Reverse Polish Notation, Addressing mode. **(Lecture 08)**

Unit IV

Input-Output Organization

I/O Interface: I/O bus and interface modules, Strobe control, Hand Shaking, DMA, Interrupts & Interrupt handling, Direct Memory access: DMA Controller and DMA Transfer **(Lecture 08)**

Unit V

Memory Organization:

Memory Hierarchy, Main Memory: RAM & ROM chips, Memory Address Map, Cache memory, Virtual Memory. **(Lecture 08)**

Text Books:

1. Mano M., *Computer System Architecture*, Prentice Hall of India.

Reference Books:

1. Vravice, Zaky & Hamacher, *Computer Organization*, Tata Mc Graw Hill
2. Tannenbaum, *Structured Computer Organization*, Prentice Hall of India.
3. Hayes John P., *Computer Organization*, McGraw Hill.

*Latest editions of all the suggested books are recommended.

Semester III
PRODUCTION AND OPERATIONS MANAGEMENT

Course Code: BCA304

L-6, T-0, P-0, C-6

Course Contents

Unit I

Operations Management: An overview, Definition of Production Management and Operations Management, Nature and Scope of Production Management, Responsibilities of Operations Manager, Operation Cycle. **(Lecture 08)**

Unit II

New Product Development, Product Design & Service Design, Various Production Systems. **(Lecture 08)**

Unit III

Plant Location: Concept, factors affecting Plant Location, methods of determining plant location, Layout Planning, Production Planning & Control- concept, objectives, functions, Aggregate Planning(output and capacity)concept, objectives, process. **(Lecture 08)**

Unit IV

Introduction to Material Management, Material Requirement Planning- concept, objectives, functions, types; MRP System, MPS system, Just in time-concept, objectives, advantages & disadvantages JIT types **(Lecture 08)**

Unit V

Introduction to Quality, Cost of quality, TQM-concept, fundamentals, components, Quality Assurance, Deming's and Juran's quality principles, Quality Circle-concept, objectives, importance, SQC (Statistical Quality Control) methods. **(Lecture 08)**

Text Books

1. Aswathappa K. & Shridhara K., *Production and Operation Management*, Himalaya
2. Gupta C.B., *Operations Management and Control*, Sultan Chand
3. Goel B.S., *Production and Operation Management*, Pragati.

Reference Books

1. Russeli Roberta S., *Production and Operation Management*, Prentice Hall
2. Sharma D.D., *Total Quality Management*, Sultan Chand
3. Adam & Ebert, *Production and Operation Management*, PHI

*Latest editions of all the suggested books are recommended.

Semester-III
PROFESSIONAL WRITING

Course code: BCA305

(Common with EHM 301/BBA306/BHM301/AR307/BCH306/BFA303)

L	T	P	C
2	0	2	3

Course Contents:

Unit I

Functional Grammar: Active and passive voice, Conditional sentences, Syntax, Concord, Common errors. **(10 Hours)**

Unit II

Requisites of Paragraph writing: Structure of Paragraph, Coherence & Unity, Development of paragraph, Inductive order, Deductive order, Spatial order, Linear, Chronological orders, Expository writing, and Argumentative writing, Factual description of objects, process, experiments. **(10 Hours)**

Unit III

Précis Writing: Techniques of Précis writing, Writing a précis. **(10 Hours)**

Unit IV

Comprehension skills: Role of listening, Reading comprehension; Reasons for poor comprehension, Improving comprehension skills. **(10 Hours)**

Text Books:

1. Ruther Ford A., *Basic Communication Skills* – Pearson Education, New Delhi.

References Books:

1. Raman Meenakshi & Sharma Sangeeta, *Technical Communication-Principles & Practice* – O.U.P. New Delhi. 2007.
2. Mohan Krishna & Banerji Meera, *Developing Communication Skills* – Macmillan India Ltd. Delhi.

NOTE:

This syllabus has been designed to improve the oral and written communication skills of students. The faculty members should put emphasis on practical (oral) activities for generating students' interest in language learning.

* Latest editions of all the suggested books are recommended.

Semester III
DATA STRUCTURE LAB USING 'C'

Course Code: BCA351

L-0, T-0, P-6, C-3

Course Contents

Program based on:

- Arrays – Sorting and searching: Insertion Sort, Quick Sort, Two Way Merge Sort, and Heap Sort. Sequential search, binary search.
- Stacks – Array Representation and Implementation of stack, Operations on Stacks: Push & Pop, Conversion of Infix to Prefix and Postfix Expressions.
- Queues – Array and linked representation and implementation of queues, Operations on Queue: Create, Add, Delete, Circular queue
- **Linked list:** Representation and Implementation of Singly Linked Lists, Traversing and Searching, Inserting and Deleting of Linked List. Same operation in Doubly Linked List, Circular Linked List.
- BST- Creation, searching and traversal.

Semester III
CBNST & CO- LAB

Course Code: BCA352

L-0, T-0, P-4, C-2

Course Contents

- Programming based on nonlinear equation- Bisection method, Regula -Falsi method.
- Programming based on linear equation: Gauss elimination and Gauss Jordan method.
- Newton's forward and backward interpolation formulae.
- Lagrange's interpolation formula.
- Numerical integration and differentiation: Trapezoidal and Simpson's rule.
- Activity: To implement the working of all basic Gates using Specific IC's.
- To minimize Boolean expression using Universal Gates.
- Implementation of Half Adder, Full Adder, Subtractor, Decoder, Encoders, Multiplexer, Demultiplexer, Flip-Flops.

Semester IV
COMPUTER ORIENTED FINANCIAL ACCOUNTING

Course Code: BCA401

L-6, T-0, P-0, C-6

Course Contents

Unit 1

Accounting: Principles, concepts and conventions, double entry system of accounting, journal entry, Ledger posting and Trial balance. **(Lecture 08)**

Unit II

Final Accounts: Trading, profit and loss accounts and balance sheet. Introduction to manufacturing account. **(Lecture 08)**

Unit III

Rectification of Errors & Bank Reconciliation statement (BRS): Classification of Errors, Location of Errors. Suspense Account and Rectifying Accounting Entries. Causes of BRS, Methods of preparing BRS **(Lecture 08)**

Unit IV

Depreciation: Meaning of Depreciation Accounting. Causes and features of depreciation. Objectives of providing depreciation, fixation of depreciation amount. Methods for providing depreciation: Fixed installment methods & Diminishing balance method. **(Lecture 08)**

Unit V

Introduction to Computerized Accounting Package i.e. "TALLY": Creation of Company. Gateway of Tally: Masters, Transactions & Reports. Alteration of Company. Features & Configuration. **(Lecture 08)**

Text Books:

1. Maheswari S.N. & Maheswari S. K., *Introduction to Financial Accountancy*, Vikas Publications.
2. Khan & Jain, *Management Accounting*, Tata McGraw Hill Publication.
3. Pandey I.M., *Financial Management*, Vikas Publications.
4. Gupta S.P., *Financial Management*, Sahitya Bhavan Publication

Reference Books:

1. Maheswari S.N. & Maheswari S. K., *Advanced Accountancy*, Vikas Publications.
2. Maheswari S.N. & Maheswari S. K., *Financial Management*, Viaks Publications.
3. Jawahar Lal, *Financial Accounting*, Wheeler Publishing.
4. Sastry K.S. & Nand Dhamesa, *The Practices of Management Accounting*, Wheeler Publishing.
5. Khan J. & Jain, *Financial Management*, Tata McGraw Hill Publication.
6. Geoffrey Knott, *Financial Management*, Palgrave Macmillan.
7. A.K. Nadhani & K.K Nadhani, *Tally 9*, BPB Publications.

*Latest editions of all the suggested books are recommended.

Semester IV SOFTWARE ENGINEERING

Course Code: BCA402

L-6, T-0, P-0, C-6

Course Contents

Unit I

Introduction: Software Engineering approach, SDLC, Software Crisis, Software Process, Process models (Waterfall, Prototype, Iterative, Evolutionary and Spiral model) **(Lecture 08)**

Unit II

Software Requirement: Analysis and Specifications DFDs, Software Requirement Specifications, Steps for constructing good SRS. **(Lecture 08)**

Unit III

Software Design: Design Concepts & Principle, Cohesion & Coupling, Function Oriented Design, Object Oriented Design.

Coding Structured programming, Programming style **(Lecture 08)**

Unit IV

Software Testing: Validation and Verification, Black Box testing approach, White Box testing approach, Levels of testing: Unit Testing, Integration Testing, Validation testing.

(Lecture 08)

Unit V

Software Maintenance: Software Maintenance Process and its types, Introduction to Reverse Engineering, Software Reliability & Quality Assurance, Software Reliability issues, Software quality measurements. **(Lecture 08)**

Text Books:

1. Jalote P., *An Integrated approach to Software Engineering*, Narosa, 1991.
2. Mall Rajib, *Software Engineering*, Prentice Hall of India.
3. Pressman R.S., *Software Engineering – A Practitioner’s Approach*, McGraw Hill Int.Ed., 1992.

Reference Books:

1. Sommerville Ian, *Software Engineering*, Pearson Education
2. Agrawal K.K. & Yogesh Singh, *Software Engineering*, New Age Publication
3. Waman S. Jawadkar, *Software Engineering-Principles and Practice*, McGraw Hill

*Latest editions of all the suggested books are recommended.

Semester IV
DATABASE MANAGEMENT SYSTEM

Course Code: BCA403

L-5, T-0, P-0, C-5

Course Contents

Unit I

(Lecture 10)

Introduction: Elements of Database System, Characteristics of database approach, File system versus DBMS, data models, DBMS architecture and data independence. Role of DBA, DDL, DML and DCL.

Unit II

(Lecture 10)

E-R Modeling: Entity types, entity set, attribute and key, relationships, relation types, roles and structural constraints, weak entities, enhanced E-R and overview of object modeling. Specialization and generalization.

Unit III

(Lecture 10)

Relational Data Model: Relational model concepts, relational constraints, relational algebra. SQL: SQL queries, programming using SQL, Integrity Constraints, Roles and privileges.

Unit IV

(Lecture 10)

Data Normalization: Functional dependencies, Normal form up to 3rd normal form & BCNF

Unit V

(Lecture 10)

Concurrency Control: Transaction processing, locking techniques, database recovery, security and authorization. Overview of recovery techniques and Database Security.

Text books:

1. Silberschatz Abraham, Korth Henry & Sudarshan S., *Database Systems Concepts*, McGraw Hill, 1997.
2. Elmarsri R. & Navathe S.B., *Fundamentals of Database Systems*, Addison Wesley, 2004
3. Date C.J., *An Introduction to Database Systems*, Addition Wiley.

Reference Books:

1. Melton Jim & Simon Alan, *Understanding the New SQL: A Complete Guide*, Morgan Kaufmann Publishers, 1993.
2. Majumdar A. K. & Battacharya P., *Data Base Management Systems*, Tata Mc Graw Hill, 1996.
3. Bipin Desai, *An Introduction to Database Systems*, Galgotia Publications, 1991.

*Latest editions of all the suggested books are recommended.

Semester IV

OBJECT ORIENTED PROGRAMMING'S (OOPs) AND C++

Course Code: BCA404

L-6, T-0, P-0, C-6

Course Contents

Unit I

Introduction: Introducing Object-Oriented Approach, Relating to other paradigms (functional, data decomposition). Basic terms and ideas: Abstraction, Encapsulation, Inheritance, Polymorphism, Basic programming of C++.

(Lecture 08)

Unit II

Classes and Objects: Encapsulation, abstract data types, Object & classes, attributes, methods, C++ class declaration, State identity and behavior of an object, Constructors and destructors, object types, Metaclass /abstract classes.

(Lecture 08)

Unit III

Inheritance: - Accessspecifiers, Types of inheritance, Ambiguity resolution in Multiple Inheritance, Constructor calling (Implicit and Explicit Constructor call) to base class , Containership and inheritance. Virtual Base Class,

(Lecture 08)

Unit IV

Friend :-Friend Function, Friend Member Function and Friend Class.

Polymorphism :- Function Overloading , Operator overloading , operator overloading using friend. Virtual function & Pure Virtual function.

(Lecture 08)

Unit V

File Handling

Stream Classes Hierarchy, Opening and closing FILE, Read and write in file. File pointers and Manipulations. Error Handling in File Operation. Command line Argument

(Lecture 08)

Text Books:

1. Lafore R., *Object Oriented Programming using C++*, Galgotia
2. Venugopal A.R. & Rajkumar, T. Ravishanker, *Mastering C++*, Tata Mc Graw Hill, 1997.
3. Lippman S. B. & Lajoie J., *C++ Primer*, Addison Wesley, 3rd Edition, 2000.

Reference Books:

1. Parasons D., *Object Oriented Programming with C++*, BPB Publication.
2. Steven C. Lawlor, *The Art of Programming Computer Science with C++*, Vikas Publication.
3. Schildt Herbert, *C++: The Complete Reference*, Tata McGraw Hill, 1999.
4. Tony Gaddis, Watters, Muganda, *Object-Oriented Programming in C++*, Dreamtech, 2004.

*Latest editions of all the suggested books are recommended.

Semester IV
MANAGEMENT INFORMATION SYSTEM

Course Code: BCA405

L-4, T-0, P-0, C-4

Course Contents

Unit I

An Overview of Management Information Systems: Types of information systems, Definition of a management information system, MIS & Decision Support Systems, Concept of an MIS.

(Lecture 08)

Unit II

Information System: End user and Enterprise Computing, Computer Peripherals, Application software and System software, Technical foundation of database management, Managing data Resources.

(Lecture 08)

Unit III

Foundation of Information Systems in Business: Information system in business, The Components of Information system, Fundamentals of strategic advantage, Using Information for strategic advantage.

(Lecture 08)

Unit IV

Business Applications of Information Technology: Internet & Business, Intranet, Extranet & Enterprise Solutions, Information System for Managerial Decision Support.

(Lecture 08)

Unit V

Managing Information Technology: Managing Information Resources and technologies, Global information technology, Security and control Issues in Information system, ethical and societal challenges of IT.

(Lecture 08)

Text Books:

1. Brian O., *Management Information System*, Tata McGraw Hill
2. Gordon B., Davis & Margrethe H. Olson, *Management Information System*, Tata McGraw Hill
3. Brian O., *Introduction to Information System*, McGraw Hill.

References Books:

1. Murdick, *Information System for Modern Management*, PHI.
2. Jawadekar, *Management Information System*, Tata McGraw Hill.
3. Jain Sarika, *Information System*, PPM
4. Davis, *Information System*, Palgrave Macmillan

*Latest editions of all the suggested books are recommended.

Semester-IV
TECHNICAL COMMUNICATION

Course code: BCA406

(Common with EHM 401/BPH406/BBA406/ /BHM401/BCH406/BFA403)

L	T	P	C
2	0	2	3

Course Contents:

Unit I

Communication: Objectives of Communication, Need for Communication, Types of communication, written & Verbal communication, Formal and informal communication (The grapevine), upward and downward communication. **(10 Hours)**

Unit II

Business communication: Importance of written business correspondence, General principles and essentials of good commercial correspondence, Different types of commercial correspondence & their drafting, Types of Business letters, Official letters, electronic communication process. **(10 Hours)**

Unit III

Project, Thesis and Dissertation writing: Project Report, Thesis & Dissertation writing Structure of Thesis writing. **(10 Hours)**

Unit IV

Modern Technology and Communication: Globalization of Business, Role of Information Technology, Tele- communication, Internet, Tele-conferencing and Video-conferencing. **(10 Hours)**

Text Books:

1. Mishra Sunita & Muraliksishra C., *Communication Skills for Engineers* – Pearson Education, New Delhi.
2. Raman Meenakshi & Sharma Sangeeta, *Technical Communication-Principles & Practice* – O.U.P. New Delhi. 2007.
3. Chabbra T N, *Business Communication*, Sun India Pub. New Delhi.

Reference Books:

1. Mohan Krishna & Banerji Meera, *Developing Communication Skills* – Macmillan India Ltd. Delhi.
2. Mitra Barum K., *Effective Technical Communication* – O.U.P. New Delhi. 2006.

NOTE:

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*** Latest editions of all the suggested books are recommended.**

Semester IV
DATABASE MANAGEMENT SYSTEM- LAB

Course Code: BCA451

L-0, T-0, P-4, C-2

Course Contents

The Programme to be implemented using SQL

1. Create Table, insert data into tables, Deletion, Updation
2. Retrieval of data using SQL statement with all possible clauses.
3. Using aggregate function
4. Using group by and having clause
5. Write query for Join, set operation
6. Creating View

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Semester IV
OBJECT ORIENTED PROGRAMMING'S (OOPS)
AND C++ LAB

Course Code: BCA452

L-0, T-0, P-6, C-3

Course Contents

Write programs in C++ for

1. Program illustrating basic input/output operations using CIN, COUT.
2. Implementing class and objects.
3. Implementing function overloading.
4. Implementing various constructors and destructor
5. Program illustrating overloading of various operators.
6. Program illustrating use of Friend, Inline, Static Member functions, default arguments.
7. Program illustrating various forms of Inheritance
8. Program illustrating use of virtual functions, virtual Base Class.

Semester V LINUX INTERNALS

Course Code: BCA501

L-5, T-0, P-0, C-5

Course Contents

Unit 1

Linux Introduction and File System: Basic Features, Advantages of Linux, Disadvantages of Linux Installing requirement, Installing the Linux system, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories. **(Lectures 08)**

Unit 2

Files and directories: Files and Directories, Examples of Absolute Paths, Current Directory, Making and Deleting Directories, Relative Paths, Special Dot Directories, Using Dot Directories in Paths, Hidden Files, Paths to Home Directories, Looking for Files in the System, Specifying Multiple Files, Specifying Files with Wildcards, Chaining Programs Together. **(Lectures 08)**

Unit 3

Linux Essential Commands pwd, cd, ls, who, whoam i, which, cp, mv, rm, mkdir, touch, hostname, cat, cal, mount, umount, login, logout, echo, wget, wc, grep, dd, test, chmod, date, du, head, tail, id, kill, ln, more, less, find.

Shell Meta Characters: Filename Substitution Metacharacters, Redirection Metacharacters, Process Execution Metacharacters, Conditional Execution Using && and ||, Quoting Metacharacters, Positional Parameters and Special Parameters. **(Lectures 08)**

Unit 4

VI EDITOR A Text Editor

Vim: Modes of Operation, The first Editing Session, Block Commands, Search, Find and Replace, Delete and Paste, Yank and Paste, Set Commands, Customizing The vi Environment, Multiple File Editing in vi, Command Line Options in vi.

Shell Programming I

Shell Variables, Shell Keywords, Another way of Assigning Values to Variables, Unix-defined or System Variables, Unchanging Variables, Positional parameters, Passing Command Line Arguments, Setting Values of Positional Parameters, Displaying Date in Desired Format, Using Shift on Positional Parameters, Arithmetic in Shell Script, tput Command. **(Lectures 08)**

Unit 5

Shell Programming II

Control Instructions in Shell, Taking Decisions, if Statement, test Command, File Tests, String Tests, Use of Logical Operators, Hierarchy of Logical Operators, Case Control Structure, Loop Control Structure, Loops, while Loop, until loop, for Loop, Using for with Command Line Arguments, Nesting of Loops, break Statement, continue Statement. **(Lectures 08)**

Text Books:

1. Unix – Sumitaba Das
2. Unix Shell Programming – Yashwant Kanetkar, Bpb Publications,

Reference Books:

1. Using Linux By Jack Tackett, David Gunter, Phi, Eee Edition
2. Red Hat Linux Bible –Cristopher Negus, Idg Books India Ltd.
3. Linux Installtion And Administration, Nicholas Wells, Course Technology (Vikas Publishing, New Delhi).

Semester V VB.NET

Course Code: BCA502

L-6, T-0, P-0, C-6

Course Contents

Unit I

The NET Framework: Introduction, Common Language Runtime, Common Type System, Common Language Specification, The Base Class Library, The .NET class library Intermediate language, Just-in-Time compilation, garbage collection, Application installation & Assemblies. **(Lecture 08)**

Unit II

The VB.NET IDE: The VB.NET IDE : The start page, Menu and Tool Bar, Toolbox, Solution Explorer, Properties Window, Task List and Output Window, Server Explorer, Keywords, variables, Data types, Operators, Decisions with if statement, Select Case statements, Loops, Arrays. **(Lecture 08)**

Unit III

Procedures, Class and Objects, Error Handling, Working with Textbox, Buttons, Labels, Checkbox, Radio Buttons, List box, Combo Box, Picture Box, Menu. **(Lecture 08)**

Unit IV

ADO.NET: ADO.NET Data Namespaces, SqlConnection, SqlCommand, SqlDataAdapter, DataSet Class, Data Binding, Data View. **(Lecture 08)**

Unit V

Building Forms, GDI+ (Graphics Handling), Windows Services, Web Services, Web Forms. Case study based on Chat applications. **(Lecture 08)**

Text Books:

1. Blair Richard & Crosland Jonathan, *Beginning VB.NET (2 Edition)*, WROX
2. Steven Holzner, *Visual Basic NET 2003*, Pearson Education
3. Shouish Chavan, *Visual Basic NET*, Pearson Education

Reference Books:

1. Jeffrey Richter, *Applied Microsoft Net Framework Programming*, Microsoft
2. Blair Richard & Crosland Jonathan *Professional VB.NET*, Willy
3. Fergal Grimes, *Microsoft Net for Programmers*, SPD

*Latest editions of all the suggested books are recommended.

Semester V COMPUTER NETWORKS

Course Code: BCA503

L-5, T-0, P-0, C-5

Course Contents

Unit I

Networks: Goal and applications, Network Criteria, Types of network, Network Topologies, Network architecture, Internetworks, OSI and TCP/IP model. **(Lecture 08)**

Unit II

Transmission Media: Type of guided and unguided Media, Modems, Network Interface Card, Attenuation, distortion, noise, Switching Theory: Circuit switching, Packet switching. **(Lecture 08)**

Unit III

Channel Allocation, FDM, TDM, Aloha Protocol, CSMA/CD Protocols, Collision free Protocols. Framing, Error Correction and detection, sliding window protocols. **(Lecture 08)**

Unit IV

Introduction to Routing Algorithms, Congestion control and prevention policies, Point to point network protocol, IP Protocol, IP addressing, sub netting. Network Devices-Repeaters, bridges, hubs, routers, gateways **(Lecture 08)**

Unit V

Transport Layer: TCP, UDP, Socket address, Port Address, Security Threats, Firewall Application layer: Introduction to WWW, Message security. **(Lecture 08)**

Text Books:

1. Forouzan, *Data Communication and Networking*, Tata McGraw Hill
2. Tanenbaum A.S., *Computer Networks*, Prentice Hall of India.
3. Godebole, *Data Communication and Networking*, TMH

Reference Books:

1. Sharma Sanjay, *Computer Network*, Keston
2. Keshav S., *An Engineering Approach on Computer Networking*, AW

*Latest editions of all the suggested books are recommended.

Semester V
INTRODUCTION TO OPERATION RESEARCH

Course Code: BCA504

L-5, T-0, P-0, C-5

Course Contents

Unit I

Introduction to operation research (OR): Nature and meaning of 'OR', Principles of Modeling, General Methods for solving 'OR' Models, Main Characteristics of 'OR', Main phases of 'OR', Scope of 'OR', Role of 'OR' in decision making, Quantitative techniques of 'OR', Development of 'OR' in India, Role of computers in Operation Research. **(Lecture 08)**

Unit II

Linear Programming Problems (LPP): Definition of LPP, Graphical Solutions of Linear Programming Problems, Simplex Method and Artificial Variable Method, Two Phase Method. **(Lecture 10)**

Unit III

Transportation Problems: Introduction to Transportation Model, Matrix Form of TP, Applications of TP Models, Basic Feasible Solution of a TP, Degeneracy in TP, Solution Techniques of TP, Different Methods for Obtaining Initial Basic Feasible Solutions viz. Matrix Minima Method, Row Minima Method, Column Minima Methods, Vogel's Approximation Method, Techniques for Obtaining Optimal Basic Feasible Solution. **(Lecture 10)**

Unit IV

Assignment Problems: Definition, Hungarian Method for AP. Travelling salesman problems. **(Lecture 04)**

Unit V

Replacement: Introduction – Replacement of items that deteriorate with time – when money value is not counted and counted – Replacement of items that fail completely. **(Lecture 08)**

Text Books:

1. Sharma S.D., *Introduction to Operation Research*, Kedar Nath and Ram Nath & Co., Meerut
2. Kapoor V.K., *Operation Research*

Reference Books:

1. Taha H.A., *Operational Research-An Introduction*, Macmillan, 1976
2. Hiller and Libermann, *Introduction to Operational Research*, McGraw Hill, Company.
3. Swarup K., Gupta P.K & Manmohan A., *Operational Research*, S.Chand, 1978.

*Latest editions of all the suggested books are recommended.

Semester V

GRAPH THEORY

Course Code: BCA505

L-5, T-0, P-0, C-5

Course Contents

Unit 1

Generating function, Recurrence Relation: Introduction, Linear recurrence relation with constant coefficient, Homogeneous solution, Particular solution, Total solution, Solution by the method of generating function. **(Lecture 08)**

Unit II

Graph: Graphs, sub-graphs, some basic properties, Walks, Path & circuits, connected graphs, disconnected graphs and component, Euler and Hamiltonian graphs, Various operation on graphs and weighted graph. **(Lecture 08)**

Unit III

Tree: Tree and its properties, circuits, Distance diameters, Radius and pendent vertices, Rooted and binary trees, Counting trees, Spanning trees, Finding all spanning trees of a graph. Cut-sets and cut vertices, some properties, All cut sets in a graph, Fundamental circuit and cut sets. **(Lecture 08)**

Unit IV

Planar graphs: Combinatorial and geometric dual, Kuratowski to graph detection of planarity, Geometric dual, some more criterion of planarity, Thickness and Crossings. **(Lecture 08)**

Unit V

Coloring and covering partitioning of graph, Chromatic number, Chromatic partitioning, Chromatic polynomials, Matching and covering, four color problem, Five Color Problems. **(Lecture 08)**

Text Books:

1. Deo Narsing, *Graph Theory with Applications to Engineering & Computer Science*, Prentice Hall of India.
2. Gupta S.C., *Combinatorics & Graph Theory*
3. Liu C. L., *Discrete Mathematics*, TMH

Reference Books:

1. Tremblay & Manohar, *Discrete Mathematical Structures with Applications to Computer Science*, Tata McGraw Hill
2. Joshi K.D., *Fundamental of Discrete Mathematics*, New Age International
3. John Truss, *Discrete Mathematics for Computer Scientist*, Addition Wesley

*Latest editions of all the suggested books are recommended.

Semester V
DISCRETE MATHEMATICS

Course Code: BCA506

L-5, T-0, P-0, C-5

Course Contents

Unit I

Propositional Calculus: Propositions, Truth tables, Logical Equivalence, Logical implications, Algebra of propositions, Conditional propositions, Bi-conditional statements, Negation of Compound statements, Tautologies and Contradiction, Normal Form, Arguments, Fallacies. **(Lecture 08)**

Unit II

Boolean algebra and Circuits: Boolean Expression, Logic Gates, Logic Circuits, Boolean Functions, Sum of Product and Product of Sum Forms, Canonical Forms, Simplification of functions using K-Map. **(Lecture 08)**

Unit III

Set Theory: Basic concepts of Set theory, some operations on sets, Venn diagram, Basic Set identities, Cartesian product.

Relation: Definition, Types of relation, Pictorial representation of relation, Composition of Relation, Equivalence relation.

Function: Definition, Classification of function, Types of function (one to one, many to one, into, onto, objective), Composition of function, Inverse function, Identity function. **(Lecture 08)**

Unit IV

Combinatorics: Fundamental principles, Permutation and Combination, Recurrence Relation, Generating Function. **(Lecture 08)**

Unit V

Graphs and Trees: Introduction to graphs, Graph terminology, Application of Graphs, Finite and Infinite graphs, Incidence and Degree, Isolated vertex, Pendent Vertex, and Null graph. **(Lecture 08)**

Text Books:

1. Sarkar Swapan Kumar, *Discrete Mathematics*, S Chand
2. Narsingh Deo, *Graph Theory with Applications to Engineering and Comp. Science*, Prentice Hall of India.
3. Seymour Lipschutz & Marc Lipson, *Discrete Mathematics*, Tata McGraw Hill

Reference Books:

1. Liu C.L., *Elements of Discrete Mathematics*, TMH
2. Neville Dean, *Essence of Discrete Mathematics*, Prentice Hall
3. Kenneth H. Rosen, *Discrete Mathematics and Its Applications*, McGraw Hill.
4. Richard Johnsonbaugh, *Discrete Mathematics*, Macmillan.

*Latest editions of all the suggested books are recommended.

Semester V

COMPUTER GRAPHICS

Course Code: BCA507

L-5, T-0, P-0, C-5

Course Contents

Unit I

Introduction: Application areas of Computer Graphics, overview of graphics systems. Graphics primitives: video-display devices, and raster-scan systems, random scan systems. **(Lecture 08)**

Unit II

Plasma displays, LCD, Plotters, printers, graphics monitors and workstations and input devices, input techniques. Output Primitives: Points and lines, line drawing algorithms, circle drawing algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms.

(Lecture 08)

Unit III

2-D Geometrical Transforms: Translation scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.

(Lecture 08)

Unit IV

2-D Viewing: The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm.

(Lecture 08)

Unit V

Computer Animation: Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications. **(Lecture 08)**

Text Books:

1. Donald Hearn & M.Pauline Baker, *Computer Graphics C Version*, Pearson Education
2. VanDam, Feiner & Hughes, *Computer Graphics Principles &Practice*, Pearson Education.
3. Steven Harrington, *Computer Graphics*, Tata McGraw Hill.

Reference Books:

1. Donald Hearn& M.Pauline Baker, *Computer Graphics*, Prentice Hall of India.
2. Zhigand Xiang, Roy Plastock, Schaum's Outlines, *Computer Graphics*,Second Edition, Tata McGraw Hill.
3. David F Rogers, *Procedural Elements for Computer Graphics*, Tata McGraw Hill,
4. Neuman & Sproul, *Principles of Interactive Computer Graphics*, Tata McGraw Hill.
5. Govil Shalin, *Principles of Computer Graphics*, PAI, Springer.
6. Steven Harrington, *Computer Graphics*, Tata McGraw Hill.

*Latest editions of all the suggested books are recommended.

Semester-V
BUSINESS COMMUNICATION

Course code: BCA508

(Common with BBA504/BCH506/BCH506)

L	T	P	C
2	0	2	3

Course Contents:

Unit I

Business Communication: Importance of written business correspondence, Essentials of good commercial correspondence, Components of commercial correspondence, Different types of commercial correspondence & their drafting, Official letters, electronic communication process.

(10 Hours)

Unit II

Employment communication: Interview, Types of interview, candidate's preparation, Impact of Technological advancement on Business communication.

(10 Hours)

Unit III

Other Forms of Technical Communication: Bio-Data Making, Resumes, Writing Job application.

(10 Hours)

Unit IV

Negotiating: The Art of Negotiation, Some truths about negotiation, Common hurdles in negotiation, Negotiating cultural diversities.

(10 Hours)

Text Books:

1. Mishra Sunita & Muraliksishra C., *Communication Skills for Engineers* – Pearson Education, New Delhi.
2. Raman Meenakshi & Sharma Sangeeta, *Technical Communication-Principles & Practice* – O.U.P. New Delhi. 2007.

Reference Books:

1. Monippally Matthukutty M., *Business Communication Strategies* – Tata- Mc Graw Hill Publications Company, New Delhi.
2. Mohan K. & Sharma R.C., *Business Correspondence of Report Writing* –TMH, New Delhi.

NOTE:

This syllabus has been designed to improve the oral and written communication skills of students. The faculty members should put emphasis on practical (oral) activities for generating students' interest in language learning.

*** Latest editions of all the suggested books are recommended.**

Semester V
INDUSTRIAL TRAINING

Course Code: BCA551

L-0, T-0, P-4, C-2

Evaluation Process

Project Guide/Supervisor of the project will be nominated by Head of Department and the internal evaluation shall be done by three faculty members committee nominated by the Director of the college.

The external evaluation will be done by the external examiner arranged by examination branch of the university.

Semester V
VB.NET- LAB

Course Code: BCA552

L-0, T-0, P-4, C-2

Course Contents

Write programs in VB.NET Illustrating

- The use of sequence, conditional and iteration construct.
- Various operators like logical, arithmetical, relational, etc.
- Overloading of various operators.
- Use of Friend, Inline, and Static Member functions, default arguments.
- Various forms of Inheritance.
- File operation.
- Use of ADO.NET

Semester V
LINUX INTERNALS AND COMPUTER GRAPHICS- LAB

Course Code: BCA553

L-0, T-0, P-2, C-1

Course Contents

Use of different commands CD, LS, CP, MD, RM, MKDIR, RMDIR, more, less, creating and viewing files, using CAT, file comparisons, View files, disk related commands, checking disk free spaces.

batch commands, kill, PS, who, sleep, Printing commands, grape, FGREP, find, sort, Cal, banner, touch, file, file related commands-WS, SAT, CUT, GREP, DD, etc. Mathematical commands- BC, EXPR, FACTOR, UNITS. VI EDITOR

Shell Programming conditional and looping statements, case statements, parameter passing and arguments, Shell variables, shell keywords, Creating Shell programs

DDA algorithm, Bresenham's algorithm for line, generation of circle, rotating a triangle.

Semester VI WEB TECHNOLOGIES

Course Code: BCA601

L-6, T-0, P-0, C-6

Course Contents

Unit I

Web: History of the web, Growth of the Web, Protocols governing the web, Introduction to Cyber Laws in India, Introduction to International Cyber laws. **(Lecture 08)**

Unit II

HTML: Formatting Tags, Links, List, Tables, Frames, forms, Comments in HTML, DHTML. **(Lecture 08)**

Unit III

XML: Introduction, Displaying an XML Document, Document type definitions. **(Lecture 08)**

Unit IV

Common Gateway Interface (CGI), PERL, RMI, COM/DCOM, VBScript. **(Lecture 08)**

Unit V

Java Script: Introduction to Documents, forms, Statements, functions, objects in JavaScript, Arrays, FORMS, Buttons, Checkboxes, Text fields and Text areas. **(Lecture 08)**

Text Books:

1. Burdman, *Collaborative Web Development*, Addison Wesley.
2. Bayross Ivan, *Web Technologies Part II*, BPB Publications.

Reference Books:

1. Gundavarma Shishir, *CGI Programming on the World Wide Web*, O'Reilly & Associate.
2. DON Box, *Essential COM*, Addison Wesley.

*Latest editions of all the suggested books are recommended.

Semester VI
INTERNET AND JAVA PROGRAMMING

Course Code: BCA602

L-6, T-0, P-0, C-6

Course Contents

Unit 1

Internet: Internet, Connecting to Internet: Telephone, Cable, Satellite connection, Choosing an ISP, Introduction to Internet services, E-Mail concepts, Sending and Receiving secure E-Mail, Voice and Video Conferencing. **(Lectures 08)**

Unit II

Core Java: Introduction, Operator, Data type, Variable, Arrays, Control Statements, Methods & Classes, Inheritance, Package and Interface, Exception Handling. **(Lectures 10)**

Unit III

Multithread Programming: I/O, Java Applet, String handling, Networking, Event handling, Introduction to AWT, AWT controls, Layout managers, Menus, Images, Graphics. **(Lectures 08)**

Unit IV

Java Swing: Creating a Swing Applet and Application, Programming using Panes, Labels, Text fields, Buttons, Toggle buttons, Checkboxes, Radio Buttons, Viewports, Scroll Panes, Scroll Bars, Lists, Combo box, Progress Bar, Menus and Toolbars, Dialog Boxes, Inner frame. **(Lectures 8)**

Unit V

JDBC: Introduction to JDBC, Types of JDBC Drivers, JDBC-ODBC Bridge, Connecting to a Database, retrieving data from a Database, Introduction to Java Server Pages (JSP). **(Lectures 08)**

Text Books:

1. Margaret Levine Young, *The Complete Reference Internet*, Tata Mc Graw Hill
2. Patrick Naughton & Herbert Schildt, *The Complete Reference JAVA2*, Tata Mc Graw Hill

Reference Books:

1. Balagurusamy E., *Programming in JAVA*, Tata McGraw Hill
2. Cay Horstmann, *Gary Cornell, Core Java*, Volume 1
3. Steven Holzner, *Java2 Black Book*, Dreamtech

*Latest editions of all the suggested books are recommended.

Semester VI

MULTIMEDIA AND ANIMATION

Course Code-BCA603

L-6, T-0, P-0, C-6

Course Contents

Unit I

Evolution of Multimedia and its objects, Scope of multimedia in business & work, Production and planning of Multimedia applications. Multimedia hardware, Memory & Storage Devices, Communication Devices, Multimedia Software, Presentation and object generation tools, Video, sound, Image capturing. **(Lecture 08)**

Unit II

Text, sound (MIDI), Digital Audio, Audio File, Formats, MIDI under Windows environment, Audio & Video Capture. **(Lecture 08)**

Unit III

Macromedia products, Basic drawing techniques, Creating multi layer combining interactivity and multiple scenes. **(Lecture 08)**

Unit IV

Digital Audio Concepts, Sampling variables, Loss Less compression of sound, Lossy compression. **(Lecture 08)**

Unit V

Multimedia monitor bitmaps, Vector drawing, Image file, Image standards, J P E G compression, Video representation, colors, video compression, MPEG standards. **(Lecture 08)**

Text Books:

1. Andreas Halzinger, *Multimedia Basics*, Firewall Media, New Delhi, Vol. I- III.
2. Tay Vaughan, *Multimedia Making it Work*, Tata McGraw Hill.
3. Buford, *Multimedia Systems*, Addison Wesley.

Reference Books:

1. Agarwal & Tiwari, *Multimedia Systems*, Excel Books.
2. Rosch, *Multimedia Bible*, SAMS Publishing
3. Sleinreitz, *Multimedia Systems*, Addison Wesley
4. Ken Milburn, John Croteau, *Flash 4 Web Special Effects, Animation & Design Handbook*, Dreamtech Press.
5. John Villamil-Casanova & Louis Molina, *Multimedia-Production, Planning & De*, Prentice Hall of India.

*Latest editions of all the suggested books are recommended.

Semester-VI
COMMUNICATION TECHNIQUE

Course code: BCA604

(Common with EHM601/BPH606/BBA603/BCH606/BHM601)

L	T	P	C
2	0	2	3

Course Contents:

Unit I

Oral Communication: Principles of effective oral communication, Features, Vitals of communication, Interpersonal communication, Persuasive communication. **(10 Hours)**

Unit II

Presentation Strategies: Purpose, Audience & Locale, Organizing contents, Preparing outlines. Audio- Visual aids, Body Language, Voice dynamics. **(10 Hours)**

Unit III

Listening Skills: The Listening process, Hearing & listening, Types of listening, Listening with a purpose, Barriers to listening, Telephonic conversation. **(10 Hours)**

Unit IV

Speaking Skills: Improving voice & speech, Art of public speaking, Using visual aids, Job interview being interviewed by the media, Dealing with the boss. Dealing with subordinates, How to run a meeting. **(10 Hours)**

Text Book:

1. Raman Meenakshi & Sharma Sangeeta, *Technical Communication-Principles & Practice* – O.U.P. New Delhi. 2007.

Reference Books:

1. Ruther Ford A., *Basic Communication Skills* – Pearson Education, New Delhi.
2. Mitra Barum K., *Effective Technical Communication* – O.U.P. New Delhi. 2006.

NOTE:

This syllabus has been designed to improve the oral and written communication skills of students. The faculty members should put emphasis on practical (oral) activities for generating students' interest in language learning.

*** Latest editions of all the suggested books are recommended.**

Semester VI
WEB TECHNOLOGY & JAVA PROGRAMMING-LAB

Course Code: BCA651

L-0, T-0, P-6, C-3

Course Contents

The students are advised to get exposed to web technologies like HTML, XML and their variants as well as Java Programming

- Write HTML/Java scripts to display your CV in Web Browser.
- Creation and annotation of static web pages using any HTML editor.
- Write a program to use XML and JavaScript for creation of your homepage.
- Write a program in XML for creation of DTD which specifies a particular set of rules.
- Create a Style sheet in CSS/XSL and display the document in Web Browser.
- Write a program in Java for illustrating, overloading, over riding and various forms of inheritance.
- Write programs to create packages and multiple threads in Java.
- Write programs in Java for event handling Mouse and Keyboard events.
- Using Layout Manager create different applications.
- Write programs in Java to create and manipulate Text Area, Canvas,
- Scroll Bars, Frames and Menus using swing/AWT.
- Using Java create Applets.
- JDBC-ODBC Connectivity.

Semester VI
MULTIMEDIA AND ANIMATION-LAB

Course Code: BCA652

L-0, T-0, P-6, C-3

Course Contents

- Web Page designing using Basic Tags in HTML.
- Introduction to JavaScript.
- CSS designing using Dreamweaver.
- CSS-Java Script Communication
- Dynamic HTML Pages using CSS-JavaScript.
- Creating small Animations using CSS.
- Introduction to Adobe Photoshop.
- Design frames using Adobe Photoshop.

Semester VI
PROJECT WORK

Course Code: BCA653

L-0, T-0, P-6, C-3

Project work to be carried out on either of the following categories:

1. Client Server Based (VB.Net/Java)
2. MIS Based (VB.Net/Java/C-C++)

Evaluation:

Project Guide/Supervisor of the project will be nominated by Head of Department and the internal evaluation shall be done by three faculty members committee nominated by the Director of the college.

The external evaluation will be done by the external examiner arranged by examination branch of the university.