Faculty of Engineering & Technology

BCA

(w.e.f. 2015-2016)

- ***Scheme of Examination***

- ***Detailed Syllabi***

University Campus

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** Approved by AC vide resolution no. …… dated ……..*

LIST OF COURSES (BCA)

CORE COURSE:

Subject/Paper

- Computer Fundamentals (BCA 101)
- C Language (BCA 102)
- Mathematics (BCA 103)
- Basics of Internet Programming (BCA 104)
- Principles of Management (BCA 106)
- Digital Electronics (BCA 201)
- Computer Organization And Architecture (BCA 202)
- System Analysis & Design (BCA 203)
- Data Structure & Algorithms (BCA 204)
- Linux Environment (BCA 205)
- Object Oriented Programming using C++ (BCA 301)
- Database Management System (BCA 302)
- Front End Design Tool (VB) (BCA 303)
- Discrete Mathematics (BCA 306)
- Operating Systems (BCA 401)
- Computer oriented Numerical & Statistical Methods using C (BCA 402)
- Java Programming (BCA 403)
- Software Engineering (BCA 404)
- Data Mining & Data Warehousing (BCA 405)
- Computer Networks (BCA 501)
- System Software (BCA 502)
- Advanced Internet Programming (BCA 503)
- Advance Java (BCA 504)
- Computer Graphics (BCA 505)
- E-Commerce (BCA 506)
- Summer Project Seminar (BCA 509)
- Advance Computer Networks (BCA 601)
- Management Information System (BCA 602)
- Artificial Intelligence (BCA 603)
- Major Project (BCA 607)
- Seminar (BCA 608)

ELECTIVE COURSE (Discipline Centric)

- .NET Technology (BCA 604A)
- Fundamental of PHP (BCA 604B)
- Principles of Accounting (BCA 604C)
- Social Implementation of IT (BCA 605A)
- Mobile Computing (BCA 605B)

ELECTIVE COURSE (OPEN/GENERIC ELECTIVE)

- Intellectual Property Rights (BCA 604D)
- Cyber Ethics & Crime (BCA 605C)
- Entrepreneurship (BCA 605D)

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)

- Communication Skills- Scientific & Technical Writing (BCA 406)
- Environmental Studies (BCA 206)
- Technical Communication (BCA 305)

SKILL ENHANCEMENT COURSE

- Communication Skills (BCA 105)
- Personality Development Lab (BCA 209)
- Managerial Personality Development (BCA 304)

Faculty of Engineering & Technology

BCA

Scheme of Examination & Detailed Syllabi

Course Structure (BCA)

Examination Scheme-BCA (2015-2016)

FIRST SEMESTER								
THEORY PAPERS		**No. of Teaching Hours**			**Marks Allocation**			
Code	**Subject/Paper**	**L**	**T**	**P**	**IA**	**EA**	**Total**	**Credits**
BCA 101	Computer Fundamentals	3	1	-	30	70	100	4
BCA 102	C Language	3	1	-	30	70	100	4
BCA 103	Mathematics	3	1	-	30	70	100	4
BCA 104	Basics of Internet Programming	3	1	-	30	70	100	4
BCA 105	Communication Skills	4	-	-	30	70	100	4
BCA 106	Principles of Management	3	1	-	30	70	100	4
PRACTICALS/VIVA-VOCE		**No. of Teaching Hours**			**Sessional**	**Practical**	**Total**	**Credits**
BCA 107	Lab-1: Computer Fundamentals & PC Computing	-	-	2	30	20	50	1
BCA 108	Lab-2: C language	-	-	2	30	20	50	1
BCA 109	Lab-3: Internet Programming	-	-	2	30	20	50	1
TOTAL		**19**	**5**	**6**	**270**	**480**	**750**	**27**
BACHELOR OF COMPUTER APPLICATIONS								
(BCA) DEGREE								
SECOND SEMESTER								
THEORY PAPERS		**No. of Teaching Hours**			**Marks Allocation**			
Code	**Subject/Paper**	**L**	**T**	**P**	**IA**	**EA**	**Total**	**Credits**
BCA 201	Digital Electronics	4	-	-	30	70	100	4
BCA 202	Computer Organization And Architecture	3	1	-	30	70	100	4
BCA 203	System Analysis & Design	4	-	-	30	70	100	4
BCA 204	Data Structure & Algorithms	3	1	-	30	70	100	4
BCA 205	Linux Environment	3	1	-	30	70	100	4
BCA 206	Environmental Studies	4	-	-	30	70	100	4
PRACTICALS/VIVA-VOCE		**No. of Teaching Hours**			**Sessional**	**Practical**	**Total**	**Credits**
BCA 207	Lab-1: Data Structure & Algorithms	-	-	2	30	20	50	1
BCA 208	Lab-2: Linux Environment	-	-	2	30	20	50	1
BCA 209	Lab-3: Personality Development Lab	-	-	2	30	20	50	1
TOTAL		**21**	**3**	**6**	**270**	**480**	**750**	**27**

(BCA) DEGREE
THIRD SEMESTER

THEORY PAPERS		No. of Teaching Hours			Marks Allocation			
Code	**Subject/Paper**	**L**	**T**	**P**	**IA**	**EA**	**Total**	**Credits**
BCA 301	Object Oriented Programming using C++	3	1	-	30	70	100	4
BCA 302	Database Management System	3	1	-	30	70	100	4
BCA 303	Front End Design Tool (VB)	3	1	-	30	70	100	4
BCA 304	Managerial Personality Development	4	-	-	30	70	100	4
BCA 305	Technical Communication	3	1	-	30	70	100	4
BCA 306	Discrete Mathematics	3	1	-	30	70	100	4

PRACTICALS/VIVA-VOCE		No. of Teaching Hours			Sessional	Practical	Total	Credits
BCA 307	Lab-1: OOPS Using C++	-	-	2	30	20	50	1
BCA 308	Lab-2: DBMS	-	-	2	30	20	50	1
BCA 309	Lab-3: Front End Design Tool (VB)	-	-	2	30	20	50	1
TOTAL		**19**	**5**	**6**	**270**	**480**	**750**	**27**

BACHELOR OF COMPUTER APPLICATIONS
(BCA) DEGREE
FOURTH SEMESTER

THEORY PAPERS		No. of Teaching Hours			Marks Allocation			
Code	**Subject/Paper**	**L**	**T**	**P**	**IA**	**EA**	**Total**	**Credits**
BCA 401	Operating Systems	3	1	-	30	70	100	4
BCA 402	Computer oriented Numerical & Statistical Methods using C	3	1	-	30	70	100	4
BCA 403	Java Programming	3	1	-	30	70	100	4
BCA 404	Software Engineering	4	-	-	30	70	100	4
BCA 405	Data Mining & Data Warehousing	4	-	-	30	70	100	4
BCA 406	Communication Skills- Scientific & Technical Writing	3	1	-	30	70	100	4

PRACTICALS/VIVA-VOCE		No. of Teaching Hours			Sessional	Practical	Total	Credits
BCA 407	Lab-1: Java	-	-	2	30	20	50	1
BCA 408	Lab-2: S.E. Lab	-	-	2	30	20	50	1
BCA 409	Lab-3: C.T Lab/Seminar	-	-	2	30	20	50	1
TOTAL		**20**	**4**	**6**	**270**	**480**	**750**	**27**
	4-6 weeks training will be held after fourth semester,viva will be conducted in fifth sem.							

FIFTH SEMESTER

THEORY PAPERS		No. of Teaching Hours			Marks Allocation			
Code	**Subject/Paper**	L	**T**	**P**	**IA**	**EA**	**Total**	**Credits**
BCA 501	Computer Networks	3	1	-	30	70	100	4
BCA 502	System Software	4	-	-	30	70	100	4
BCA 503	Advanced Internet Programming	3	1	-	30	70	100	4
BCA 504	Advance Java	3	1	-	30	70	100	4
BCA 505	Computer Graphics	3	1	-	30	70	100	4
BCA 506	E-Commerce	4	-	-	30	70	100	4

PRACTICALS/VIVA-VOCE		No. of Teaching Hours			**Sessional**	**Practical**	**Total**	**Credits**
BCA 507	Lab-1: Advance Internet Programming	-	-	2	30	20	50	1
BCA 508	Lab-2: .Advance Java	-	-	2	30	20	50	1
BCA 509	Summer Project Seminar	-	-	2	30	20	50	1
BCA 510	Industrial Visit	-	-	-	-	-	-	1
TOTAL		**20**	**4**	**6**	**270**	**480**	**750**	**28**

SIXTH SEMESTER

THEORY PAPERS		No. of Teaching Hours			Marks Allocation			
Code	Subject/Paper	L	T	P	IA	EA	Total	Credits
BCA 601	Advance Computer Networks	3	1	-	30	70	100	4
BCA 602	Management Information System	4	-	-	30	70	100	4
BCA 603	Artificial Intelligence	3	1	-	30	70	100	4
	Elective (any one)							
BCA 604A	.NET Technology	3	1	-	30	70	100	4
BCA 604B	Fundamental of PHP	3	1	-	30	70	100	4
BCA 604C	Principles of Accounting	3	1	-	30	70	100	4
BCA 604D	Intellectual Property Rights	3	1	-	30	70	100	4
	Elective (any one)							
BCA 605A	Social Implications of IT	3	1	-	30	70	100	4
BCA 605B	Mobile Computing	3	1	-	30	70	100	4
BCA 605C	Cyber Ethics & Crime	3	1	-	30	70	100	4
BCA 605D	Entrepreneurship	3	1	-	30	70	100	4
PRACTICALS/VIVA-VOCE		**No. of Teaching Hours**			**Sessional**	**Practical**	**Total**	**Credits**
BCA 606	Lab-1: .NET/PHP Lab	-	-	2	30	20	50	1
BCA 607	Major Project	-	-	4	100	50	150	2
BCA 608	Seminar	-	-	2	30	20	50	1
TOTAL		**16**	**4**	**8**	**310**	**440**	**750**	**24**
Grand Total of Credits		**115**	**25**	**38**	**1660**	**2840**	**4500**	**160**

L=LECTURER, T= TUTORIAL, P=PRACTICAL, IA=INTERNAL ASSESSMENT, EA=EXTERNAL ASSESSMENT

The student will submit a synopsis at the beginning of the semester for approval from the departmental committee in a specified format, thereafter he/she will have to present the progress of the work through seminars and progress reports. Seminar related to the project should be delivered one after starting of semester .The progress will be monitored through seminars and progress reports.

Note;--

1. The total number of the credits of BCAProgramme are = 160.

2. Each student shall be required to appear for examinations in all courses. However, for the award of the degree a student shall be required to earn minimum of 150 credits.

BCA- I SEMESTER

BCA-101 Computer Fundamentals	**Maximum Marks**	**100 (Cr. – 4)**
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Computer Basics: What are computers? The evolution of computers, Generations of Computers, classification of Computers, **Interfacing with the Computer:** What is Data Processing, Data and Information, Block Diagram, Input-output devices, Description of Computer input- Output Units, Hardwares and softwares.

Number System: Representation of integers, Representation of Fractions, Octal and Hexadecimal representation of numbers, Decimal to Binary Conversion. Binary addition, subtraction of numbers, Two's Complement representation of numbers, Addition/ subtraction of numbers in 2's Complement rotation, Binary multiplication, Binary division, Floating Point representation of numbers.

UNIT – II

Computer Memory: Memory Cell, Memory Organization, Read Only Memory, Serial Access Memory, Physical Devices Used to construct Memories, Magnetic Hard disk, Floppy Disk Drives, Compact Disk Read Only Memory, Magnetic Tape Drives. **Languages:** Programming Language, Assembly language, Low level and high level languages, assemblers, compilers, interpreters, linkers, algorithms, flow charting, decision tables, pseudo code.

UNIT – III

Software concepts: System & application software packages. **Operating system:** Why do we need an Operating System? Batch operating system, Multiprogramming Operating system, Time sharing operating system, Personal Computer Operating System, Unix Operating System, On-line and Real time system.

UNIT – IV

Data and Network Communication: Types of Communication, Need for computer communication networks, Internet and World Wide Web, Characteristics of Communication Channels. Allocation of Channel, Physical communication media, Computer Network Topologies, Communication Protocols, Local Area Networks, ATM Networks, Interconnecting Networks

UNIT – V

Introduction to MS-Word, MS-Excel, MS-Power point: Introduction, Windows 2007 Interface, Customizing the Word Application, Document Views, Basic Formatting in MS Word 2007, Advanced Formatting, Navigating through a Word Document, Performing a Mail Merge, A Quick Look at Macros, Printing Documents, Print Preview ***Excel 2007:*** Introduction, Workbook, Worksheet, Formatting in excel, Advanced formatting in Excel, Working with formulas, Printing worksheets ***MS PowerPoint:*** Introduction, Creating a Presentation, Basic Formatting in PowerPoint, Advanced Formatting, Using Templates, Inserting charts, Inserting tables, Printing presentations

TEXTBOOKS:

- "Introduction to Information Technology", ITL Education Solutions Ltd., Pearson Education
- Sinha P. K. & Sinha Priti, "Computer Fundamentals", BPB Publications.,

REFERENCES:

- Raja Raman V.,"Introduction to Computers", PHI Publications
- Leon Alex & Leon Mathews,"Introduction to Computers", Vikas Publishing House
- Norton. Peter,"Introduction to Computers", TMH
- Saxena Sanjay.,"A First Course in Computers", Vikas Publishing House Pvt. Ltd.
- Nagpal D.P.,"Computer Fundamentals", S. Chand Publications
- Bharihoke Deepak,"Fundamentals of Information Technology", Excel Books

BCA-102 C Language	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I **Overview of Programming Language:** Introduction to algorithms, Flow charts, Tracing Flow charts, Problem solving methods, Need for computer languages, History and importance of C, Reading programs written in C language. **C Basics:** C character set, Identifiers and Keywords, Data types, Declarations, Expressions, statements and symbolic constants, Input-Output: getchar, putchar, printf, gets, puts functions. Preprocessor commands, # include, #define, ifdef, preparing and running a complete C program.

UNIT – II **Loops, Operators and Expressions:** Arithmetic, Unary, Logical, bit-wise assignment and conditional operators, Library functions, Control statements, while, do-while, for statements, nested loops, if else, switch, break, continue and goto statements, comma operators.**Arrays :**Defining and processing, One-dimensional Arrays, Two Dimensional Arrays, Multidimensional Arrays. Enum

UNIT – III **Functions:** Defining and accessing: Passing arguments, Function protypes, Recursions, Use of library functions, Storage classes: Automatic, external and static variables **String functions:** strings, operations on strings, String handling functions: string comparing, concatenating, copying.

UNIT – IV **Pointers:** Pointer Declarations, accessing a variable through its pointer, chain of pointers, Passing to a functions, Operations on pointers, Pointer and arrays, Arrays of pointers, pointers to functions, pointers and structures. **Dynamic Memory allocation:** Dynamic memory allocation, allocating a block of memory: Malloc, allocating multiple blocks of memory: Calloc, releasing the used space: Free, Altering the size of a block: Realloc.

UNIT – V **Structures and Unions:** Defining and declaring structure variables, accessing structure variables, operations on structures, Arrays of structures, arrays within structures, passing to a function, size of structures, Unions.

File Management in C: Defining and opening and closing a file, input/output operations on files, error handling during I/O operations on unformatted data files.

TEXTBOOKS:

- Balaguruswamy E., "*Programming in ANSI C"*, Third Edition, Tata Mc Graw Hill Publishing Company Limited.

REFERENCES:

- Subburaj R., "*Programming in C*", Vikas Publishing house Pvt. Ltd.

BCA-103 Mathematics	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Algebra: Revision of equations reducible to quadratic form Simultaneous equations (linear and quadratic) upto 2 variables only. Determinants and their six important properties, solutions of simultaneous equations by Cramer's rules. Matrices, definition of special matrices (like unit, singular, diagonal matrices etc…) arithmetic operation on matrices, transpose, ad joint and inverse of matrix, solution of simultaneous equations using matrices. **Trigonometry:** Revision of angle measurement and T-ratios addition, subtraction and transformation formulae. T-ratio of multiple and allied angles.

Analytical plane geometry: Cartesian coordinates, distance between two points, area of triangle, locus of point, straight line, slope and intercept form, general equation of first degree.

UNIT – II

Differential Calculus: Limit of functions, differential coefficient, differentiation of standard functions, including functions of function (chain rule), differentiation of implicit functions, logarithmic differentiation, parametric differentiation, successive differentiation. **Integral Calculus:** Integration as inverse of differentiation, indefinite integrals of standard forms, integration by parts, by partial and by substitution, formal evaluation of definite integrals.

UNIT – III

Differential equations: Definition and formation of ordinary differential equations, equations of first order and first degree, variable separable, homogeneous equations, non homogeneous equations, linear equations and differential equations reducible to these types. **Statistics:** Measure of central tendency, ideal characteristics, mean, median, mode, GM, H.M. and weighted mean form, quartile, deciles, percentiles

UNIT – IV

Measures of dispersion, range, quartile deviation, standard deviation, mean deviation. Discrete and continuous frequency distribution .Calculation of standard deviation for discrete and continuous frequency distribution. Standard errors of means, coefficient of variation.

UNIT – V

Probability: Events and Baye's theorem, probability distributions: Binomial, Poisson and Normal distribution. **Linear correlation and regression analysis:** Scatter plots, methods of least squares, fitting of straight lines and parabolas. Pearsonian coefficient of correlation. Lines of regression. Regression coefficient

TEXTBOOKS:

- Grewal . B.S., *"Elementary Engineering Mathematics*", Khanna publications 34th Ed., 1998.
- Gupta, S. P and Kapoor V.K, *Fundamental of Mathematical Statistics*, Sultan Chand and Sons, New Delhi.

REFERENCES:

- Kreszyig E., "Advanced Engineering Mathematics", 5th Edition, John Wiley & Sons,1999
- Dass . H.K., "Advanced Engineering Mathematics", S. Chand & Company, 9th Revised Edition,2001.
- Narayan . Shanti, "Integral Calculus", S. Chand & Company, 1999
- Narayan . Shanti, "Differential Caluculs", S.Chand & Company, 1998

BCA-104 Basics of Internet Programming	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Introduction to Internet

Web Browser, What the web browser does, Overview of famous web browsers, Web servers, Uniform resource locators (URL), what is www, Search Engines, Electronic mail, Email software

UNIT – II

HTML an introduction

What HTML is-and What It isn't, History of HTML, Structuring HTML page, The HTML><HEAD><TITLE><BODY>tags, Paragraphs, Font tags, Creating different types of Links, Introduction to lists, Different types of lists.

UNIT – III

Tables

Introduction, Table pats, Sizing tables, borders, cells, Table and cell color and alignment, Aligning your table content, spanning multiple rows and columns, grouping and aligning rows and columns.

UNIT – IV

Forms & Frames

Understanding forms and functions, Essential elements of forms, Displaying control labels, Grouping control with field set and legend, What are frames , Working with linked windows, Working with frames, Changing frame borders

UNIT – V

DHTML

What is DHTML, The concept of style sheets, Approaches to style sheets, commonly used style sheet properties and values, Controlling page layout CSS properties, Backgrounds, colors and images, setting border appearance Inline style sheets

REFERENCES:

1. Jonathan Gennick with Tom Luers, 'Teach yourself HTML', 2nd Edition ,SAMS

2. HTML: A Beginner's Guide by Wendy Willard (Author)

BCA-105 Communication Skills	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Meaning, Importance and Process of Communication, Objectives of Communication, Types of Communication, and Barriers to Communication. Essentials of Communication; 7C's and 4S Communication.

UNIT – II

Concept of Presentation , Need for presentation, Difficulties in Presentation, Types of Presentation, Stages in Presentation, Five Star Strategy for planning , Presentation Aids, How to make presentation effective, Delivering the presentation. Difference between presentation and Public Speaking, Reasons for a speech, Controlling Nervousness and Stage Fear.

UNIT – III

Meaning of Group Discussion, Qualities looked in group discussion, Do's and Don'ts for group Discussion, Guidelines for Effective Group Discussion, Group Discussion Techniques. Interview, Types of Interview, Steps in Interview Process, Things that are required for the Interview, Guidelines for Effective Interviewing, Planning the Interview, Tips to face the Interview Board.

UNIT – IV

Defining Personality, Types of Personality, How to develop one's Personality, Leadership Skills, Types of Leader, knowing your Skills. How to do Negotiations, Handle conflict and complaints. Effective Presentations, Mock GD'S and Mock Interviews

UNIT – V

Paragraph Writing, Letter Writing, Covering Letter and C.V. Writing, E Mail Writing. Report Writing: Types, meaning and importance.

TEXTBOOKS:

- Creating Confidenceby Meribeth Bunch, Kogan Page.
- Sinha K.K., Business communication, Kalyani Publications.

REFERENCE BOOKS:

- Bahl . Sushil ,Business Communication Today, Sage Publication.
- Pal . Rajendra, Korlahalli. J.S., Essentials of Business Communication, Sultan Chand &Sons
- Be your Best,Ed . by Steve Smith, Quest

BCA-106 Principles of Management	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

Unit I

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 II

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.

UNIT III

Organizing: 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 IV

Staffing: Concept, Nature and Importance of Staffing. Scope of staffing Motivating and Leading: Nature and Importance of Motivation; Types of Motivation

Unit V

Controlling: Nature and Scope of Control; Types of Control; Control Process; Control Techniques – Traditional and Modern; Effective Control System

TEXTBOOKS:

- Gupta C.B., Principles and Practice of Management, Mayoor paperbacks

REFERENCES:

- Prasad L.M., Principles and Practice of Management, Sultan Chand and Sons.
- Terry George R., Franklin Stephen G., C, A.I.T.B.S. Publisher sand Distributors Singh Nirmal, Principles of management, Deep and Deep Publications Pvt. Ltd

BCA-107 Computer Fundamental & PC Computing Lab	**Maximum Marks**	**50 (Cr. – 1)**
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

LIST OF EXPERIMENTS :

1. Create simple news letter in ms word.

2. Create greeting card in ms word.

3. Create a mail merge letter in MS Word.

4. Create a macro for inserting a picture and formatting the text.

5. Create a simple presentation in MS Power Point to list simple dos commands, hardware, software.

6. In Power Point create an animation with video and sound.

7. In MS Excel create a report containing the pay details of the employee with followings:

    It contains: sl no, name, employee id

    Enter the following formula to calculate the respective values.

        da (60% of basic)

        hra (7.5% of basic)

8. Create a student result sheet:

9. Create a pie chart for a sample data and give legends

10 create a macro which creates a line chart using the data in the worksheet

BCA-108 C Language Lab	**Maximum Marks**	**50 (Cr. – 1)**
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

LIST OF EXPERIMENTS :

1. Write a program to calculate the area & perimeter of rectangle.
2. Write a program to calculate the area and circumference of a circle for a given radius.
3. Write a program to calculate simple interest for a given principal/amount.
4. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
5. Write a program to find profit and loss (in percentage) of a given cost price and selling price.
6. Write a program to find out the maximum among the three given numbers.
7. Write C programs that use both recursive and non-recursive functions To find the factorial of a given integer.
8. Write a program to print the list of first 100 odd number.
9. Write a program to calculate the sum of the digits of a number and display it in reverse order.
10. Write a program to generate a Fibonacci series.
11. Write a program to generate the following series:

```
*
* *
* * *
 * * * * *
* * * * * *
```

12. Write a program to generate the following series:

```
01
0  1  0
0  1  0  1
0  1  0  1  0
```

13. Write a program using a function to check whether the given number is prime or not.
14. Write a program to check whether the given string is a palindrome or not.
15. Write a C program that uses functions to perform the following operations: To insert a sub-string in to given main string from a given position.
16. Write a C program to determine if the given string is a palindrome or not.
17. Write a program to swap two variables a & b using pointers.

18 Write a program to enter a line of text from keyboard and store it in the file. User should enter file name.

19 Write a recursive program for tower of Hanoi problem

20 Write a C program that uses functions to perform the following:

- Addition of Matrices.
- Multiplication of Matrices.

21. Write a program to copy one file to other, use command line arguments.
22. Write a C program to reverse the first n characters in a file. (Note: The file name and n are specified on the command line.)
23. Write a program to perform the following operators an Strings without using String functions
    - To find the Length of String.
    - To concatenate two string.
    - To find Reverse of a string.
    - To Copy one sting to another string.
24. Write a Program to store records of an student in student file. The data must be stored using Binary File.Read the record stored in "Student.txt" file in Binary code.Edit the record stored in Binary File.Append a record in the Student file.

Write a programmed to count the no of Lowercase, Uppercase numbers and special Characters presents in the contents of File.

BCA-109 Internet Programming Lab	Maximum Marks	50 (Cr. – 1)
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

LIST OF EXPERIMENTS

1.Web page creation using HTML
   i)To embed an image map in a web page
   ii) To fix the hot spots
   iii) Show all the related information when the hot spots are clicked.

2. Web page creation with all types of cascading style sheets.

3. Create an attractive form using the html code.

4. Create an attractive CV using the html code.

5. Create a web page uses frame by the html code.

6. Write an html code for creates the ordered list.

7. Write an html code for creates the unordered list.

8. Write an html code for creates the definition list.

9. Web page creation using DHTML.

10. Web page creation using java script.

BCA- II SEMESTER

BCA-201 Digital Electronics	**Maximum Marks**	**100 (Cr. – 4)**
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Number System & Codes : Introduction, Types of Number Systems - Binary, Octal, Hexadecimal ,Signed & Unsigned Binary numbers, Binary Arithmetic – Addition, Subtraction, Multiplication, Division, Codes – BCD, EXCESS-3, Gray, Hexadecimal, Octal, ASCII, EBCDIC, Error Detection and Correction codes.

UNIT – II

Logic Gates & Boolean Algebra : Digital Signals, Basic Digital Circuits , Boolean algebra & theorems

Gate-Level Minimization : Standard forms – SOP & POS, Karnaugh Map – 2, 3 & 4 variables , Simplification using K maps, Minterms & Maxterms, Don't care conditions

Combinational Logic Design : Half Adder, Full Adder, Half Subtractor, Full Subtractor Multiplexer / Encoder, Demultiplexer / Decoder, Comparator, Parity Generator / Checkers, Code Converters.

Sequential Logic

UNIT – III

Flip Flops: Introduction, Types of FF - Clocked S-R FF, J-K FF, D-type FF, T type FF, Master Slave JKFF, Edge triggered flip flops, Excitation Tables of Flip Flops.

UNIT – IV

Registers : Introduction, Sequential Circuits, Shift Registers, Serial Input Serial Output, Serial Input Parallel Output, Parallel Output, Parallel Input Serial Output, Bi-directional Shift Registers, Universal Shift Register.

Counters : Introduction, Types – Asynchronous Counter or Ripple Counters, Synchronous Counters, Counter Design.

UNIT – V

Introduction to Digital Logic Families: Introduction, Characteristics of Digital IC's, Introduction about TTL & CMOS Logic, Tri – State Logic.

TEXT BOOKS:

- M.Morris Mano ; "Digital Design" ; Prentice–Hall of India
- Jain R.P. ; "Modern Digital Electronics" ; Tata McGraw-Hill

REFERENCE BOOKS:

- Ghoshal, D. Mohan, Dharminder Kumar, "Digital Elecronics", Galgotia Book Source.
- Malvino Leech ; "Digital Compuer Elecronics" ; Tata McGraw-Hill
- Tokheim ; "Digital Electronics Principles & Applications" ; Tata McGraw-Hill

BCA-202 Computer Organization & Architecture	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Register Transfer and Micro-operations: Register transfer language, Register transfer, control function, Memory transfer, Arithmetic Micro-operations, Logical Micro-operations.

Basic Computer Organization and Design: Instruction Codes, Computer Instructions, Timing and Control, Instruction cycle

UNIT – II

Central Processing Unit: General Register Organization, Stack Organization, Instruction Formats, Addressing Modes.

Pipelining: parallel processing, Instruction Pipeline

UNIT – III

Micro programmed Control Unit: Control Memory, Address sequencing, Micro program sequencer.

UNIT – IV

Input-Output Organization: Peripheral Devices, I/O Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupts, Direct Memory Access

UNIT – V

Memory Organization: Memory hierarchy, RAM & ROM chips, Auxiliary Memory, Cache Memory, Associative Memory, virtual Memory

TEXT BOOKS:

- Mano . M.Morris ; “Computer System Architecture” ; Prentice–Hall of India

REFERENCE BOOKS:

- William Stallings ; “Computer Organization & Architecture – Designing for Performance” ; Prentice–Hall of India
- Hayes . John P. ; “Computer Architecture and Organization” ; Tata McGraw-Hill

BCA-203 System Analysis & Design	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Definition of System, Sub-System, Component with examples, Characteristics and elements of system And Different types of system. Discuss Business as a System and identify its sub-systems, components etc. Role and Need of System Analyst , Responsibilities of system analyst. Types of Information System(TPS, MIS, Expert System, DSS, OAS, KWS, ESS).

UNIT – II

SDLC – System Development Life Cycle, Introduction and need. Discuss the different phases of waterfall model [SDLC], What is the problem, Feasibility study, Analysis, Design, Implementation, Post-Implementation and Maintenance. Types of Software Lifecycle Models

UNIT – III

System study Course Objectives – Requirement analysis – fact finding techniques. Tools of structured Analysis – DFD, Data Dictionary, Decision Tables, Decision Tree, Structured English along with its pros and cons of each tool

UNIT – IV

Outline design of input and output. Data and data dictionary. Physical system design – databases and its design, ER-Model. File structure and file organization-types and importance

UNIT – V

Forms and form design its types, User Interface Design. Planning for implementation – education and training. System testing – need and types. Maintenance. Types of Maintenance

TEXTBOOKS

- Elias M. Awad Galgotia Publication [P] Ltd……System Analysis and Design
- Whitten, Jefrrey L BPB Publication……System Analysis and Design

SUGGESTED READINGS

- Jeffrey L. Whitten, McGraw-Hill Lonnie D. Bentley……Analysis and Design of Information Systems
- James A Senn McGraw…….Hill Analysis and Design of Information Systems

BCA-204 Data Structure & Algorithms	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Introduction: Data Structures, data structure operations, complexity, Asymptotic Notation, Time/Space trade-off.

Linear Lists: Arrays, address calculation in single and multidimensional arrays, operations on array, sequential search, Binary Search and their complexity analysis.

UNIT – II

Linked lists and its operations: linked list, representation of link list in memory, traversing a link list, insertion into a link list, deletion from a link list, header link list, two way link lists.

UNIT – III

Trees: Definition of tree, Binary tree and related terms, Application of binary tree, Tree Traversals, Threaded tree, Binary Search Tree, heap , heap sort, General trees.

UNIT – IV

Graph: introduction, sequentional representation of Graphs, adjacency matrix, path matrix, operations on graphs ,traversing a Graph, Warshall's algorithm.

UNIT – V

Sorting Techniques : Selection, Insertion, Bubble, Merge, Quick, Radix sort, searching and hashing.

TEXTBOOKS:

- Schaum Series, "Introduction *to Data Structures*", TMH.
- R.B. Patel, "*Expert Data Structures with C*", Second Edition, Khanna Book publishing Co (P) Ltd.

REFERENCES:

- Tenenbaum, "*Data Structure using C++*", PHI.
- Chattopadhyay S., Dastidar d G.and Chattopadhyay Matangini., "*Data Structure through C language*", BPB publications.

BCA-205 Linux Environment	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I Linux – The Operating System: Linux history, Linux features, Linux distributions, Linux's relationship to Unix, Overview of Linux architecture, Installation, Booting, Login and Shutdown Process, Start up scripts, controlling processes, system processes (an overview).
Linux Internals - System Calls, Process Management, Memory Management, Disk and filesystems ,Networking ,Security, Graphical User Interface, Device Drivers.

UNIT – II Files: File Concept, File System Structure, File Attributes, File types, The Linux File System: Basic Princples, Pathnames, Mounting and Unmounting File Systems,Different File Types, File Permissions, Directory Structure,System calls, file descriptors, low level file access – File structure related system calls (File APIs), file and record locking, file and directory management – Directory file APIs, Symbolic links & hard links.

UNIT-III Working with the Bourne again shell (bash):Introduction, shell responsibilities, types of shell,pipes and input Redirection, output redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples Simple filters pr, head,tail etc. filter using regular expression-grep,sedinterrupt processing, debugging shell scripts.

UNIT-IV Process – Process concept, Kernel support for process, process attributes, process control process creation, waiting for a process, process termination, zombie process, orphan process, Process APIs. Signals– Introduction to signals, Signal generation and handling, Kernel support for signals, Signal function, unreliable signals, reliable signals, kill, raise, alarm, pause, abort, sleep functions.
Interprocess Communication: Introduction to IPC, Pipes, and FIFOs, Introduction to three types of IPC-message queues, semaphores and shared memory.

UNIT-V Multithreaded Programming: Differences between threads and processes, Thread structure and uses Threads and Lightweight Processes, POSIX Thread APIs, Creating Threads, Thread Attributes, Thread Synchronization with semaphores and Mutexes.

TEXT BOOKS:

1. Unix System Programming using C++, T.Chan, PHI.(UNIT III to UNIT VIII)

2. Unix Concepts and Applications, 4th Edition, Sumitabha Das, TMH.

3. Beginning Linux Programming, 4th Edition, N.Matthew, R.Stones,Wrox, Wiley India Edition.

REFERENCE BOOKS:

1. Linux System Programming, Robert Love, O'Reilly, SPD.

2. Advanced Programming in the Unix environment, 2nd Edition, W.R.Stevens, Pearson Education.

3. Unix Network Programming ,W.R.Stevens,PHI.

4. Unix for programmers and users, 3rd Edition, Graham Glass, King Ables, Pearson Education.

BCA-206 Environment Studies	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

Unit-1

Ecosystem and Biodiversity: Components and types of ecosystem, Structure and functions of Ecosystem, Values, Type and levels of Biodiversity, Causes of extension, and Conservation methods of biodiversity.

Unit- 2

Air Pollution: Definition, different types of Sources, effects on biotic and abiotic components and Control methods of air pollution.

Unit- 3

Water pollution: Definition, different types of Sources, effects on biotic and abiotic components and treatment technologies of water pollution.

Unit- 4

Noise Pollution: Introduction of noise pollution, different Sources, effects on abiotic and biotic environment and Control measures.

Unit-5

Non Conventional energy sources: Introduction, Renewable Sources of Energy: Solar energy, wind energy, Energy from ocean, energy from biomass, geothermal energy and Nuclear Energy.

Recommended Reference Books:

1. Brunner R.C., Hazardous Waste Incineration, McGraw Hill Inc. 1989.
2. Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
3. Cunningham, W.P, Cooper, T.H. Gorhani, E & Hepworth, M.T. , Environmental Encycolopedia, Jaico Publishing House, Mubmbi, 2001.
4. De. A.K., Environmental Chemistry, Wiley Eastern Ltd.
5. Down to Earth, Centre for Science and Environment (R)
6. Gleick, H.P. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute. Oxford Univ. Press.
7. Gilpin, Alan. Environmental Impact Assessment (EIA), cutting egde for the 21th century. Cambridge university Press.

BCA-207 Data Structures & Algorithms Lab	Maximum Marks	50 (Cr. – 1)
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

S.No.	*List of Exercises*
1	Write a program to insert an element at desire position in the array.
2	Write a program to delete an element at desire position from the array.
3	Write a program to replace an element at desire position in the array.
4	Write a program to search (linear search) an element in the array.
5	Write a program to search (binary search) an element in the array.
6	Write a program to addition and multiply of two matrices.
7	Write a program to implementation of stack using array.
8	Write a program to implementation of queue using array.
9	Write a program to implementation link list.
10	Write a program that sorts the array through Bubble sort.
11	Write a program that sorts the array through Quick sort.
12	Write a program that sorts the array through Merge sort.
13	Write a program that sorts the array through Insertion sort.
14	Write a program to BST (binary search tree) addition, deletion and searching.

BCA-208 Linux Environment Lab	Maximum Marks	50 (Cr. – 1)
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

List of experiments

1. Write a shell script to ask your name, program name and enrollment number and print it on the screen.
2. Write a shell script to find the sum, the average and the product of the four integers entered
3. Write a shell program to exchange the values of two variables.
4. Find the lines containing a number in a file
5. Write a shell program to reverse the digits of five digit integer
6. Write a shell script to find the largest among the 3 given numbers
7. Write a shell program to search for a given number from the list of numbers provided using binary search method
8. Write a shell script to display the digits which are in odd position in a given 5 digit number
9. Write a shell program to concatenate two strings and find the length of the resultant string
10. Write a shell program to find the position of substring in given string
11. Write a shell program to display the alternate digits in a given 7 digit number starting from the first digit
12. Write a shell program to find the gcd for the 2 given numbers
13. Write a shell program to check whether a given string is palindrome or not.
14. Write a shell script to find the smallest of three numbers
15. Write a shell program to add, subtract and multiply the 2 given numbers passed as command line arguments

BCA-209 Personality Development Lab	**Maximum Marks**	**50 (Cr. – 1)**
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

List of Exercises

1. **Resume / Report Preparation / Letter Writing**

   Structuring the resume / report – Letter writing / Email Communication – Samples.
2. How to give your Self Introduction.
3. **Presentation skills:**

   Elements of effective presentation – Structure of presentation – Presentation tools – **Body language** – Video samples
4. Soft Skills
5. **Presentation Skills:** Students make presentations on given topics.
6. **Group Discussion:** Students participate in group discussions.
7. **Interview Skills:** Students participate in Mock Interviews

BCA- III SEMESTER

BCA-301 Object Oriented Programming using C++	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I **Introduction:** Introducing Object-Oriented Approach, Relating to other paradigms(functional, data decomposition).

Basis Features of OOPs: Abstraction, Encapsulation, Inheritance, Polymorphism, Review of C, Difference between C and C++ - cin, cout, new, delete operators.

UNIT – II **Classes and Objects:** Encapsulation, information hiding, abstract data types, Object &classes, attributes, methods, C++ class declaration, State identity and behavior of an object, Constructors and destructors, instantiation of objects, Default parameter value, object types, C++ garbage collection, dynamic memory allocation, Meta class/abstract classes.

UNIT – III **Inheritance and Polymorphism:** Inheritance, Class hierarchy, derivation – public, private & protected, Aggregation, composition vs classification hierarchies, Polymorphism, Categorization of polymorphism techniques, Method polymorphism, Polymorphism by parameter, Operator overloading, Parametric polymorphism,

UNIT – IV **Generic function –** template function, function name overloading, Overriding inheritance methods, Run time polymorphism, Multiple Inheritance.

UNIT – V **Files and Exception Handling:** Persistent objects, Streams and files, Namespaces,Exception handling, Generic Classes

Text/ Reference Books:

1. A.R.Venugopal, Rajkumar, T. Ravishanker "Mastering C++", TMH, 1997.
2. S. B. Lippman & J. Lajoie, "C++ Primer", 3rd Edition, Addison Wesley, 2000.
3. R. Lafore, "Object Oriented Programming using C++", Galgotia Publications, 2004.
4. D . Parasons, "Object Oriented Programming with C++", BPB Publication.
5. Steven C. Lawlor, "The Art of Programming Computer Science with C++", Vikas Publication.
6. Schildt Herbert, "C++: The Complete Reference", 4th Ed., Tata McGraw Hill, 1999.
7. Tony Gaddis, Watters, Muganda, "Object-Oriented Programming in C++", 3rd Ed., Wiley Dreamtech, 2004.

BCA-302 Database Management System	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I **Basic Concepts:**Database Management system , Characteristics of a Database, Database Administrators, Types of Database system, Data Dictionary, Advantage and Disadvantages of databases systems, Data Models, Schemas & Instances, DBMS Architecture & Data Independence, Data Languages & Interfaces,

UNIT – II **Entity-Relationship Model:** Data modeling using the Entity-Relationship Approach. E-R Modeling: Entity types, entity set, attribute and key, relationships, relation types, roles and structural constraints, weak entities.

Conventional Data Models & Systems: Network Data Modeling concepts, Constraints in the Network model, Data Manipulation in a Network Database, Hierarchical Database Structures, Integrity Constraints and Data Definition in the Hierarchical Model.

UNIT – III **Relational Model and Relational Algebra:** Relational Model concepts, Relational Algebra: Terminology, Operators – Write, Operator –Retrieval, Select, Project, Union, Intersection, Difference, Cartesian Product, Join, Natural Join, Outer Join. RELATIONAL MODEL: Relationship Algebra Selection and Projection, Set Operations, Renaming, Joints, Division

UNIT – IV **Relational Database Design:**Function Dependencies & Normalizations for Relational Database, Functional Dependencies, Normal Forms based on primary keys (INF, 2NF, 3NF & BCNF).

Concurrency Control Techniques, Locking Techniques: Concept of concurrency control, Multivalued dependency and Join dependency. Concurrency Control: Lock Based Protocols; Time Stamped Based Protocols, Deadlock Handling, Recovery Techniques, Recovery Concepts, Database Backup and Recovery from catastrophic failures.

UNIT – V **SQL AND TRIGGERS:** Data Definition in SQL, view and queries in SQL. Specifying Constraints, DDL,DML,DCL, Union, Intersection and Except, Nested Queries, Correlated Nested Queries, Set-Comparison Operations, Aggregate Operators, Null Values, Triggers and Active Databases.

TEXT BOOKS:

- Elmarsi R. and Navathe. SB "Fundamentals of Database Systems"., Addison Wesley publication.
- "Oracle 9i": The Complete Reference,TMH ,Oracle Press.

REFERENCE BOOKS:

- Silberschatz. Abraham, Korth.Henry, Sudarshan. S. “Database Systems Concepts”,McGraw Hill.
- Desai Bipin “An Introduction to Database Systems”., Galgotia Publications
- Date .C. J. “An Introduction to Database Systems”., Pearson Education Asia
- Widom. Ullman “A First Course in Database Systems”., Pearson Education Asia
- Leon.Alexis & Leon Mathews “Database Management System”.,Vikas Publishing House pvt. Ltd.

BCA-303 Front End Design Tool (VB)	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I **Visual Basic:** Variable Names, Data Types, Assignment, If-then, If-then-else, if then-elseif-else, expression, print statement, arrays, variable declaration, built-in & User defined types, Subroutine and functions, Boolean Operators, Arithmetic Operator, For- .next, do loop, while-wend, procedure/Public, Private and Static & Dim Statement.

UNIT – II Structure of VB program, Forms & built in controls, Properties and events, Code Module, Scale Modes, Printer Object (Printing text, setting Fonts, graphics), Common dialog Boxes, picture controls, image-controls, send keys, MS-Common Controls, Error Handling, Classes, Control Arrays, MDI, SDI.

File Handling – Text and Binary Files, Files System Orbit Object.

UNIT – III **Database Interface:** Review of ANSI SQL, ODBC, Pass through ODBC, DAO, MS-Jet Engine, DB-Engine, Workspaces, Databases, recordsets, Data bound controls, ActiveX controls, ADO, Active X Data controls, RDO.

UNIT – IV Data view Window, Data Environment Designer, Crystal Report and Data Report Utility Using Visual Basic (VB) for Transaction Management, Concurrency Control, Interfacing with RDBMS, Backend Stored procedure Usage.

UNIT – V **Visual Basic Lab:** Any 2 minor projects from the following

Develop an Application using Visual Basic : Bank transactions management, Hotel Management, Gas agency management, Office automation, Railway reservation, Computerisation course registration, Hostel management, Hospital management, Inventory management, Competitive examination database, Air line reservation, Transport management, College admission, Library management.

Note: Any Relational Database System can be used as back end.

TEXT BOOKS:

- Petroutsos .E, "Mastering Visual Basic 6.0", BPB Publications, 1998.
- Perry, Greg, "Teach Yourself Visual Basic 6 in 21 Days", Techmedia, 1998.

REFERENCES BOOKS:

- Petroutsos . E., "Mastering Database Programming with Visual Basic 6", BPB Publications, 2000
- Peter. Norton, "Peter Norton's Guide to Visual Basic 6", Techmedia, 1998.

BCA-304 Managerial Personality Development	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

How to give a good Self-Introduction? Defining a good personality, Importance of Inter-personal skills, Developing self-confidence, Positive thinking.

UNIT – II

Basic Etiquettes: Meeting & Greeting Skills, Mobile Etiquettes, Fax Manners, E-mail Manners & Dining Etiquettes.

UNIT – III

Stress Management, Importance of Time Management, Wardrobe Management, How to handle a difficult boss & a difficult clients.

UNIT – IV

Public Speaking, Presentation Skills, Importance of Voice Modulation & Body Language.

UNIT – V

Basic Letter Writing, Interview Skills, GD tips, Mock GD & PI.

TEXT BOOKS:

- Mcgrath . E.H., "Basic Managerial Skills for all" , Fourth Edition, , Prentice Hall of India Pvt. Ltd., New Delhi,1998.
- Wood . F.T ., "Remedial English Grammer for foreign students"., , Mcmillan, New Delhi.

REFERENCE BOOKS:

- Steve Smith ., "Be your Best, Ed"., Quest.
- Bunch . Meribeth ., "Creating Confidence" ., Kogan Page.

BCA-305 Technical Communication	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Technical Communication: Definition & Purpose, Characteristics of Technical Communication, Audience-Centered Communication: Description & Effectiveness, Rhetorical Awareness in Technical Communication, Legal and Ethical Communication: Description & Importance, Implicit and Explicit Rules of Communication: Definitions & Examples, Types of Technical Documents

UNIT – II

Establishing Goals in Technical Writing, The Technical Writing Process: Prewriting, Writing & Rewriting, Connecting With Your Audience Through Writing, Understanding the Tone and Voice of Your Message, Selecting the Best Words for Your Message, Using Nondiscriminatory Language in Business Communication

UNIT – III

Titles & Headings in Technical Documents, Types of Definitions Used in Technical Writing, Ethical Dilemmas in Technical Writing, Mistakes of Composing Definitions in Technical Writing, Writing Technical Descriptions, Writing Technical Specifications, Introductions of Technical Documents, Conclusions of Technical Documents, Recommendations in Technical Documents, Glossary, Footnotes & Appendix in Technical Documents

UNIT – IV

The Role of Visuals in Communication, Using Visuals to Present Data: Textual Graphics vs. Visual Graphics, Ethical Considerations When Using Visuals in Workplace Communication

UNIT – V

Types of Resumes, Parts of Your Resume: Sections & Relevant Information, Tailoring the Content of Your Resume for a Job, Formatting Your Resume: Layout & Distribution Types, The Cover Letter: Importance, Details & Format

Text/Reference Books:

1. Meenakshi Raman, Sangeeta Sharma, Technical Communication: Principles and Practice, Oxford University Press, 3rd Ed.
2. Barun K. Mitra, Effective Technical Communication: A Guide for Scientists and Engineers, Oxford University Press, 1st Ed.

BCA-306 Discrete Mathematics	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Graphs: Directed and undirected graphs, chains, circuits, paths, cycles, connectivity, adjacency and incidence matrices, Minima's path application (flow charts and state transition graphs, algorithms for determining cycle and minimal paths, polish notation and trees, flows ion networks.)

UNIT – II

Groups and Subgroups: Group axioms, semi-groups, Permutation Groups, Subgroups, Cosets, Normal subgroups.

Applications of Groups: FREE Semi-groups, Applications, (modular arithmetic, error correcting codes, grammars, languages, Finite State Machine)

UNIT – III

Finite Fields: Definition Representation, Structure, Integral domain, Irreducible polynomial, polynomial roots, Splitting fields.

UNIT – IV

Posets and Lattices: Posets, Relations to partial ordering, Hasse diagram, Lattices.

Boolean algebra: Axiomatic definition of Boolean algebra as algebraic structures with two operations basic results truth values and truth tables.

UNIT – V

The algebra of prepositional function. The Boolean algebra of truth-values, Application (Switching circuits, Gate circuits).

Text Books:

- C.L.Liu *Elements of Discrete Mathematics* Mc Graw-Hill Book, 1985.

- Kenneth G. Rosen, "*Discrete Mathematics and its applications*", McGraw – Hill International Editions, Mathematics Series
- Kolman, Busby and Ross, *"Discrete Mathematical Structure*", PHI, 1996.
- Sarkar . S.K., "*Discrete Maths*"; S. Chand & Co., 2000
- Scymour Lipschutz, "*Discrete Mathematics*", McGraw-Hill International Editions, Marc Lars Lipson, Schaum's Series.

Reference Books:,

- Dass . H.K., "*Advanced Engineering Mathematics*", S. Chand & Company, 9th Revised Edition, 2001.
- Richard Johnsonbough," *Discrete Mathematics"* Pearson Eduction Inc., 2002.
- Alan Doerr, "*Applied Discrete Structures for Computer Science*", Galgotia Publications Pvt. Ltd

BCA-307 OOPS Lab Using C++	**Maximum Marks**	**50 (Cr. – 1)**
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

List of Exercises

1 Write a program to Create Class with Static Data Member.

2 Write a program to define a class to represent a bank account. Include the following members

Data Members

a) Name of the depositor
b) Account number
c) Type of account
d) Balance amount in the account

Member Functions

a) To assign initial values
b) To deposit an amount
c) To withdraw an amount after checking the balance
d) To display name and balance

Write a program to test the program.

3 Write a program to using INLINE function.

4 Write a program to using FRIEND function

5 Write a program to using Operator Overloading Unary Minus.

6 Write a program to using inheritance

7 Write a program to using Function Overloading.

8. Write a program to create files with constructor function.

9. Write a program reading from two files simultaneously.

10. Write program containing a possible exception. Use a try block to throw it and a catch block to handle it properly.

BCA-308 DBMS LAB	Maximum Marks	50 (Cr. – 1)
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

List of Exercises

1. Create the student/employee Table and construct the following requires for the database…
   1..1. Create the table for student/employee.
   1..2. Find out name of all students.
   1..3. Retrieve the list of name and the city of all students.
   1..4. List of all students/employee who stay in city "BOMBAY" or city DELHI".
   1..5. List of all students /employee who are located in "MADRAS".

2. (1)Apply these Operations on employee table
   2..1. Insert
   2..2. Select
   2..3. Update
   2..4. Drop
   2..5. Delete
   2..6. Alter

3. Create table with attributes emp. No., emp. Name, Designation, Salary, and Department no. Construct for following queries…..
   .1 Display complete information of all the employees working as a manager.
   .2 Display name of all the employees working as a clerk.
   .3 Suppose DA for manager is 75% of salary then display name of all managers.
   .4 Select names and designation whose salary is greater then 15000.
   5. Apply key constraints as Primary Key, Foreign Key etc as per requirement.

4. Between operation- list of all Employee Name & DOJ (date of joining) to join the Company in 2010

5. Join operation- list of all the employees along with their department information by using join operation.

6. AND/OR operation- make a table that have an employee Perform AND/OR operation.

7. Group by function-
   Create the table for facilities having faculty-id, dept. no., designation name and group by similar dept.no. Facilities by using count function.

8. Order by ACS function-
   (a) Create a table for emp. Using following data:- emp. name, emp age, emp salary, emp city & display the emp salary in ascending and descending order.

9. Max-Min function- create a table for student having similar attributes s_name, S_marks, s_id, s_sec & remark.
    - 9..i. Find the maximum marks obtained by student.
    - 9..ii. Find the minimum marks obtained by student.
    - 9..iii. Sum of all students marks using sum function.
    - 9..iv. Find the average of marks using avg function.

10. Drop operation- Perform Drop Operation.

11. a) Define DBMS.
    b) Key Component- Entity, Attributes
    c) SQL
        1) DDL
        2) DML
    d) Relational data model-
        1) Relation
        2) Tuple
        3) Domain
        4) Degree

BCA-309 Front End Design Tool (VB) Lab	Maximum Marks	50 (Cr. – 1)
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

List of Exercises

1. Write a vb code to make a simple calculator.
2. Write a vb code to generate a factorial of a number and star pattern.
3. Write a vb code for changing the font style & color of the given text.
4. Write a vb code to design a mark sheet & also calculate the grade.
5. Write a vb code to draw shapes like rectangle, oval, square, circle etc.
6. Write a vb code to add, remove, clear and count data from list box at execution time.
7. Write a vb code to design a form with following : menus, file, edit & format.
8. Write a vb code to show the implementation of sub-procedure & functions.
9. Write a vb code to find greatest amond eight elements in an array.
10. Create a table in oracle named as customer having field CUST_ID,CUST_NAME,Designation,address,DOB ,DOJ.
11. Write a vb code to create the connectivity with database using adode control and perform the following task insert,update & delete .

BCA- IV SEMESTER

BCA-401 Operating Systems	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Basic Concepts: Basic elements of a computer system-Processor ,Main Memory,I/O Modules , System Bus Instruction Execution, Definition of Operating System, Functions of Operating System, Introduction to Batch Systems, Multi programmed batch systems, Time-sharing system, Personal Computer System, Parallel system, Distributed system, Real time systems.

UNIT – II

Operating system structures: System components, operating system services, system calls, system programs, System structures, Virtual machines.

UNIT – III

Processes: Process Concept, Process Scheduling, Operation on Processes CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling,

Process Synchronization: Background, The Critical-Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization

UNIT – IV

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock

UNIT – V

Memory Management: Background, Logical versus Physical Address space, swapping, Contiguous allocation, Paging, Segmentation

Virtual Memory: Demand Paging, Page Replacement, Page-replacement Algorithms, Performance of Demand Paging, Allocation of Frames, Thrashing, Other Considerations.

TEXTBOOKS:

- Operating System Concepts,Pearson Education,Silbersachatz and Galvin
- Operating Systems,PHI,Tannenbaum

REFERENCES:

- An Introduction to Operating System Design,Addison Wesley Pub.Co.,H.M. Deital
- Operating Systems,Prentice Hall of India.,W. Stallings
- Operating Systems, TMH, Godbole

BCA-402 Computer oriented Numerical & Statistical Methods using C	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Computer Arithmetic: Floating-point representation of numbers, arithmetic operations with normalized floating point numbers and their consequences. Error in number representation pitfalls in computing.

Iterative Methods: Bisection, False position, Newton Raphson methods, Finding 1/n th root by Newton Raphson, Discussion of Convergences, Polynomial evaluation, solving polynomial equations (Bairstow's Methods).

UNIT – II

Linear and Ordinary Differential Equations: Solving of Simultaneous Linear Equations and ordinary Differential Equations by Gauss elimination method, Pivoting, ILL conditioned equations, Gauss Seidal Iterative methods, Taylors series and Euler methods, Runga Kutta Methods (First, Second and Fourth Order), Predictors correctors methods(Milne's and Adams Predictor corrector)

UNIT – III

Interpolation: Interpolation, concept, Extrapolation, Polynomial interpolation, Difference tables, Newton's Forward, Backward Interpolation Formulae, Central Difference Formulae, Stirling's and Bessels's Formulae, Newton's Divided difference, Lagrange's method, Inverse interpolation(Lagrange's Method, Iterative Method).

UNIT – IV

Numerical Differentiation and Integration: Introduction, Concept, Differentiation formulae based on polynomial fit , pitfalls in differentiation, Trapezodial, Simpson's rules ($1/3^{rd}$, $3/8^{th}$) and Gaussian Quadrature, Errors in Trapezoidal and Simsons's $1/3^{rd}$ Rule.

Statistical Methods I: Introduction to Sampling, Types of sampling, Sample distributions. Z-Test

Statistical Methods II: Test of significance, χ^2, t (dependent and independent) and F test.

UNIT – V

Analysis of Variance (ANOVA 1) : Analysis of Variances: Definition, Assumptions, Cochran's Theorem, One Way classification, ANOVA Table.

Analysis of Variance (ANOVA 2) : Two way classification (with one observation per cell).

Time Series analysis: Introduction, Components and Analysis of Time Series, Measurement of Trend(Graphical, Semi-Averages, Moving averages, Least Square Method),Seasonal Fluctuations(Ratio to Moving Average, Ratio to Trend, Link relative Method) and Cyclic movement.

TEXT BOOKS:

- Grewal, B.S., "Numerical Methods in Engineering & Science with Programs in Fortran 77, C & C++", 7th Edition, July 2005, Khanna Publishers.
- Sastry, S.S.,"Introductory Methods of Numerical analysis", 4th Edition, Feb 2005, Prentice Hall of India.

REFERENCE BOOKS:

- Rajaraman, V.,"Computer Oriented Numerical Methods", 3rd Edition, Feb 2005, Prentice Hall of India.
- Goyal, Manish, " Comprehensive Computer Based Numerical and Statistical Techniques", 2nd Edition, 2005, Laxmi Publications.
- Jain, Iyengar, Jain, "Numerical Methods for Scientific and Enggineering Computation", 4th Edition, 2004, New Age International (P) Ltd.

BCA-403 Java Programming	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I Features of Java Programming Language; Introduction to JDK, JVM, Bytecode; Java Programming: Data types, accesspecifiers, operators, control statements, arrays; Classes: Fundamentals, objects, methods, constructors.

Polymorphism: method overloading, constructor overloading.

UNIT – II **Inheritance:** Types of inheritance; Concept of super class, sub class, this and super operator, method overriding, Use of final, packages, abstract class, interface.

UNIT – III **Exception Handling:** Exception Class, built in checked and unchecked exceptions, user defined exceptions, use of try, catch, throw, throws, finally.

Multi threaded programming: Overview, comparison with multiprocessing, Thread class and runnable interface, life cycle, creation of single and multiple threads, thread priorities.

UNIT – IV **Java Library:** String handling (only main functions), String Buffer class. Elementary concepts of Input/Output: byte and character streams, System.in and Sysem.out, print and println, reading from a file and writing in a file.

UNIT – V **Applets:** Introduction, Life cycle, creation and implementation, AWT controls:

Button, Label, TextField, TextArea, Choice lists, list, scrollbars, check boxes, Layout managers,

Elementary concepts of Event Handling: Delegation Event Model, Event classes and listeners,

Adapter classes, Inner classes. Swings: Introduction and comparison with AWT controls.

TEXTBOOKS:

- E. Balagurusamy, *Programming with Java*, TMH
- Herbert Schieldt, *The Complete Reference:Java*, TMH
- Horstmann, *Core Java*, Addison Wesley
- Rich raposa, *Learning Java*, Wiley

BCA-404 Software Engineering	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I **Software Engineering**: Introduction and Definition of Software Engineering. Software Crisis, Software Processes & Characteristics.

Software Process Models: Software development life cycle (SWDLC), Software development life cycle models:-Waterfall, Prototype, Evolutionary, RAD, and Spiral Models

UNIT – II **Software Requirements analysis & specifications**: Requirement analysis tasks, Analysis principles. Requirement elicitation techniques like FAST, QFD, Requirements analysis using DFD, Data dictionaries & ER Diagrams, Requirements documentation, Nature of SRS, Characteristics & organization of SRS.

UNIT – III **Software Project Management Concepts**: The Management spectrum, The People, The Problem, The Process, The Project.

Software Project Planning: Size Estimation like lines of Code & Function Count, Cost Estimation Models, COCOMO, Risk Analysis.

UNIT – IV **Software Design**: Design fundamentals, Effective modular design: Data architectural and procedural design, Design documentation. Function Oriented Design, Object Oriented Design.

UNIT – V **Software Testing:** Testing Fundamental, Characteristics of Testable Software,Test Characteristics, Testing Techniques:-Black-box testing,White-box testing. Testing Strategies:-Unit Testing, Integration and System Testing.

TEXTBOOKS/ REFERENCE BOOKS:

1. R. S. Pressman, "Software Engineering – A practitioner's approach", McGraw Hill Int. Ed.
2. I. Sommerville, "Software Engineering", Addison Wesley, 2004
3. Rajib Mall, "Fundamental of Software Engineering", 3rd Edition, PHI Learning Private Limited
4. K. K. Aggarwal & Yogesh Singh, "Software Engineering", 2nd Ed., New Age International, 2005.
5. James Peter, W. Pedrycz, "Software Engineering: An Engineering Approach", John Wiley & Sons.
6. Pankaj Jalote, "An Integrated Approach to Software Engineering", Narosa, 3rd Ed., 2005.

BCA-405 Data Mining & Data Warehousing	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

What is Data Mining? Data mining Functionalities, Pattern Interestingnees, Classification of data mining system, major issues in data mining.

Why preprocess the data? Data cleaning, Data integration and Transformation, Data reduction

UNIT – II

Difference between OLTP and OLAP. What is data warehouse, a multidimensional data model, Data warehouse architecture, Data warehouse implementation. Concept of Data mart.

UNIT – III

Data Mining primitives, Data Mining Query language, Designing GUI based on DMQL, Architecture of Data Mining System.

Association rule Mining, Mining single-dimensional Boolean Association rules from relational databases & datawarehouses, Constraint based association mining.

UNIT – IV

What is classification? What is prediction issues regarding classification prediction classification by decision tree induction, Bayslan classification, classification by back propagation.

What is cluster analysis, categorization of major clustering methods, partitioning methods, Hierarchical methods, outlier analysis

UNIT – V

Application and trends in data mining, data mining applications, social impacts of data mining, trends in data mining.

TEXTBOOKS/ REFERENCE BOOKS:

1. J. Han & Michelize Kamber, “Data mining-Concepts & techniques” , Morgan Kaufman Publisher.
2. Sam Anahory & Dennis Murray, “Datawarehousing”, Pearson Education.
3. Micheal J.A. Berry, Gordan S. Linoff, “Mastering Data Mining” , John Willey & Sons.
4. Clande Seidman, “Data Mining with Microsoft SQL server 2000”, Prentice Hall India.

BCA-406 Communication Skills- Scientific & Technical Writing	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Basics of Communication Skills Vis- & - Vis Scientific and Technical organization, Flow of Communication in various scientific and technical organizations: upward, downward, lateral.

UNIT – II

Communication networks in the scientific and technical organizations, History of various scientific and technical developments.

UNIT – III

Awareness of general and applied scientific and technical events, popularization of scientific and technical writings,

UNIT – IV

Precautionary measures in scientific and technical writings, Media coverage of scientific and technical writings.

UNIT – V

Writing science feature, article, editorial, Special article, interviewing a scientist, facing a press conference by a scientist, Writing a Press Release on the subject relating to science and technology, Delivering a public speech on the matter relating to Science and Technology.

TEXTBOOKS/ REFERENCE BOOKS:

1. Sinha K.K., Business communication, Kalyani Publications.
2. Bahl . Sushil ,Business Communication Today, Sage Publication.
3. Pal . Rajendra, .Korlahalli .J.S, Essentials of Business Communication, Sultan Chand &Sons

BCA-407 Java Lab	**Maximum Marks**	**50 (Cr. – 1)**
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

List of Exercises

Practical 1: Write a program to compute the sum of the digits of a given integer number.

Practical 2: Given a number, write a programming using (while/ do..while/for) loop to reverse the digits of the number. For example, the number 12345 should be written as 54321.

Practical 3: Write a program (making use of class and methods), which will read a string and rewrite it in the alphabetical order. For example, the word JAIPUR should be written as AIJPRU.

Practical 4: Write a program that accepts a shopping list of five items from the command line and stores them in a vector.

Practical 5: Write a program to show the application of interface and abstract class.

Practical 6: Define an exception called "NoMatchException" that is thrown when a string is not equal to "India". Write a program that uses this exception.

Practical 7: Write a program to implement multithreading making use of **Thread** class and/or **Runnable** interface.

Practical 8: Write a program to implement the concept of packages.

Practical 9: Develop an applet that receives three numeric values as input from the user and then displays the largest of the three on the screen. Write a HTML page and test the applet.

Practical 10: Develop an applet which runs a banner with text "Welcome to JaganNath University" making use of multithreading.

BCA-408 S.E. Lab	Maximum Marks	50 (Cr. – 1)
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

Tool Required: Rational Rose Enterprise Edition

List of Experiments:

1. Write down the problem statement for a suggested system of relevance.
2. Do requirement analysis and develop Software Requirement Specification Sheet (SRS) for suggested system.
3. To perform the function oriented diagram: Data Flow Diagram (DFD) and Structured chart.
4. To perform the user's view analysis for the suggested system: Use case diagram.
5. To draw the structural view diagram for the system: Class diagram, object diagram.
6. To draw the behavioral view diagram : State-chart diagram, Activity diagram
7. To perform the behavioral view diagram for the suggested system : Sequence diagram, Collaboration diagram
8. To perform the implementation view diagram: Component diagram for the system.
9. To perform the environmental view diagram: Deployment diagram for the system.
10. To perform various testing using the testing tool unit testing, integration testing for a sample code of the suggested system.
11. 10 Perform Estimation of effort using FP Estimation for chosen system.
12. 11 To Prepare time line chart/Gantt Chart/PERT Chart for selected software project.

Text Books:

1. K.K. Aggarwal & Yogesh Singh, "Software Engineering", New Age International, 2005
2. Pankaj Jalote, "An Integrated Approach to Software Engineering", Second Edition, Springer.

NOTE:- At least 8 Experiments out of the list must be done in the semester.

BCA-409 **C.T Lab/Seminar**	**Maximum Marks**	**50 (Cr. – 1)**
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

Objective I:

Prepare an article on "Computers and their relevance in Indian Society".

Objective II:

Practice Interview Techniques

Objective III:

Practice the art of preparing a resume.

Objective IV: Seminar:

Practice the art of giving presentations on various subjects

BCA- V SEMESTER

BCA-501 Computer Network	**Maximum Marks**	**100 (Cr. – 4)**
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Introduction: History and Development of Computer Networks, Advantage of Computer Networks, Topologies, Network Hardware, Network Software, OSI and TCP.IP reference models.LAN, WAN & MAN.

UNIT – II

Physical Layer: Theoretical basis for data communication, transmission media, type of transmission. Medium Access Sub layer: Channel allocation Problem in Multiple access protocols. Local Area Networks: Introduction, Primary attributes of LAN, IEEE LAN standards: 802.3, 802.4, 802.5, 802.6, (MAN), FDDI.

UNIT – III

Data Link Layer: Data link control protocols: Line discipline, flow control, error control, synchronous and asynchronous protocols, character and bit oriented protocols, Link access procedures. Design Issues, Routing algorithms, Congestion Control algorithms, Internetworking.

UNIT – IV

Transport Layer: Transport layer functions, connection management, functions of session layers, presentation layer and application layer. The transport service, Elements of transport protocols.

UNIT – V

Application Layer: Services of Application Layer, Network Security, DNS, E-mail, SNMP, USENET, Worldwide Web, Multimedia, IP Spotting Introduction of ISDN and ATM.

TEXT BOOKS/ REFERENCE BOOKS

1. Andrew S.Tanenbaum, "Computer Networks", 4th Edition, Prentice Hall of India publishing Pvt. Ltd.,
2. Uyless Black, "Computer Networks Protocols, Standards and Interfaces, 2nd Edition, Prentice Hall of India publishing Pvt. Ltd.

BCA-502 System Software	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT I

System software introduction, Evolution of Components of a Programming System, General Machine Structure - Memory, Registers, Data and Instructions. Machine Language - No Looping, Address modification using instruction as Data and Index registers, Looping. Assembly Language Program using Literals and pseudo -ops.

UNIT II

Introduction to Assemblers - General design procedure, Design of Assembler- Statement of Problem, Data Structures, Format of Databases, Algorithm (2-pass assembler) in brief with flowchart

UNIT III

Macro Language and the Macro Processor: Macro instructions, Features of Macro facility - Macro instruction argument, Conditional Macro expansions, Macro call within Macros and Implementation- Two-Pass macro processor with flowchart

UNIT IV

Loaders and Linkers: - Loader Schemes, Compile and Go Loader, General Loader scheme, Absolute Loaders, Subroutine Linkages, Relocating Loaders, Direct-Linking Loaders, Binders, Linking loaders, Overlays, Dynamic Binders. Design of an Absolute Loader

UNIT V

Introduction to Compilers: Different phases- Lexical Phase, Syntax Phase, Interpretation Phase, Optimization Phase, Storage Assignment Phase, Code Generation Phase and Assembly phase.

TEXT BOOKS/ REFERENCE BOOKS

1. D. M. Dhamdhere, “Systems Programming and Operating Systems”, Second Revised Edition, Tata McGraw-Hill, 1999
2. Leland L. Beck, “System Software – An Introduction to Systems Programming”, 3rd Edition, Pearson Education Asia, 2000.
3. M. Joseph “System Software”, Laxmi Publications First edition, 2007

BCA-503 Advance Internet Programming	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I Introduction to dynamic web designing and scripting languages , client side and server side scripting , Introduction to ASP, ASP set up, ASP running, ASP first script, ASP syntax, ASP with VB script and java script, Displaying date , time and text.

UNIT – II PROGRAMMING FEATURES OF ASP-Operators, variables, If statement, select statement, static and dynamic arrays, ASP procedures, Do loop, for loop, Subroutines and include virtual, Strings

UNIT – III COOKIE- Creation of Cookies, retrieval of cookie values, cookies with keys, ASP SESSION OBJECT- starting and ending of session, storing and retrieval of session values, removing session variables. ASP APPLICATION OBJECT-store and retrieval of application variables lock and unlock application

UNIT – IV Global.asa file, send email, displaying pictures from an asp file, asp objects, asp comments, asp components, asp special characters, asp vs PHP, open read and creates files

UNIT – V ASP forms- forms with get and post method, accessing a database from an asp page, Ado- active x data objects, ADO database connection, display records, add records, sort records, delete rercords, update records from an asp page through ADO's .

TEXT BOOKS/ REFERENCE BOOKS

1. Greg Buczek, "ASP Developer's Guide", TMH.
2. SAMS book co-written by the course author/instructor, Paul Litwin, and Mike Amundsen

BCA-504 Advance Java	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT-I Introduction to Java & Object Oriented Programming, Importance of Java for Internet , Java Magic, Byte Code Java Buzzwords Simple program of java Using super keyword Dynamic method dispatch· Final class and Methods Packages, Access Protections Interfaces Exception Handling Fundamentals Working with finally clause

UNIT-II Threads and MultithreadingBasicsCreating and Running a Thread The Thread control MethodsThread life cycleThreadPrioritiesThread synchronization,

The Applet & Event Handling Applet Fundamentals Applet Architectures An Applet skeleton The HTML APPLET tag Passing parameters to Applet Delegation based Event handling Event classAction Event Window Event Mouse Event Key Event.

UNIT-III **Introduction to AWT: Working with windows, Graphics Text** AWT ClassesWindows fundamentals working with Frame windowworking with GraphicsWorking with Colors & Fonts.

A Tour of SwingJApplet Icons& Labels Button & Label, Text Field &Buttons,Checkboxes, Radio buttonsCombo Box & Various controls of Swing.

UNIT-IV **String Handling, Streams and Input/Outputs Programming** String class String Buffer class Java I/O Stream classes**JavaBeans** Introduction & Advantages of JavaBeans Application Building Tools Bean Development Kit JAR Files Developing Simple Bean Using the BDK The Java Bean API.

UNIT-V IntroductionOf Servlets**,** Life cycle of servlet , Handling HTTP Get Request, Handling HTTP Post Request , Introduction of JSP , Life cycle of JSP, custom tag library of JSP , event handling of JSP and servlet.

TEXT BOOKS/ REFERENCE BOOKS

1. Java The Complete Reference- by Herbert Schildt Tata McGraw-Hill
2. Mastering Java2 J2SE1.4- by John Zukouski PBP Publication
3. JavaTM How to Program sixth Edition- By H.M Deitel, P.J. Deitel
4. JAVA 2, J2SE 1.4 Complete, BPB Publication.

BCA-505 Computer Graphics	**Maximum Marks**	**100 (Cr. – 4)**
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT I

I**ntroduction** to Raster scan displays, Storage tube displays, refreshing, flicking, interlacing, color monitors, display processors resolution, working principle of dot matrix, inkjet laser printers, working principles of keyboard, mouse scanner, digitizing camera, track ball , tablets and joysticks, graphical input techniques, positioning techniques ,rubber band techniques, dragging etc.

UNIT II

Scan conversion techniques, image representation, line drawing, simple DDA, Bresenham's Algorithm, Circle drawing, general method, symmetric DDA, Bresenham's Algorithm, curves, parametric function, Beizier Method, B-sp-line Method.

UNIT III

2D & 3D Co-ordinate system, Translation, Rotation, Scaling, Reflection Inverse transformation, Composite, transformation, world coordinate system, screen coordinate system, parallel and perspective projection, Representation of 3D object on 2D screen.

UNIT IV

Algorithms: Point Clipping. Line Clipping Algorithms, Polygon Clipping algorithms, Introduction to Hidden Surface elimination, Basic illumination model, diffuse reflection, specular reflection, phong shading, Gourand shading ray tracing, color models like RGB, YIQ, CMY, HSV etc.

UNIT V

Multimedia components, Multimedia Hardware, SCSI, IDE, MCI, Multimedia data and file formats, RTF, TIFF, MIDI, JPEG, DIB, MPEG, Multimedia Tools, Presentation tools, Authoring tools, presentation.

TEXT BOOKS/ REFERENCE BOOKS

1. Foley et.al, Computer Graphics Principles & Practice, Addision , 1999

2. David F.Rogers, Procedural Elements for Computer Graphics, McGraw Hill Book Company

3. D.Heam and P.Baker, Computer Graphics, Prentice Hall 1986

4. R.Plastock and G.Kalley, Theory and Problems of Computer Graphics, Schaum's Series., McGraw Hill.

BCA-506 E-Commerce	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

Unit I

Introduction to E-Commerce: The Scope of Electronic Commerce, Definition of Electronic Commerce, Electronic Commerce and the Trade Cycle, Electronic Markets, Electronic Data Interchange, Internet Commerce, E-Commerce in Perspective.

Business Strategy in an Electronic Age: Supply Chains, Porter's Value Chain Model, Inter Organizational Value Chains, Competitive Strategy, Porter's Model, First Mover Advantage, Sustainable Competitive Advantage, Competitive Advantage using E-Commerce, Business Strategy, Introduction to Business Strategy, Strategic Implications of IT, Technology, Business Environment, Business Capability, Existing Business Strategy, Strategy Formulation & Implementation Planning, E-Commerce Implementation, E-Commerce Evaluation.

Unit II

Business-to-Business Electronic Commerce: Characteristics of B2B EC, Models of B2B EC, Procurement Management Using the Buyer's Internal Marketplace, Supplier-Oriented Marketplace, Intermediary-Oriented Marketplace, Just-in-Time Delivery, Other B2B Models, Auctions and Services from Traditional to Internet-Based EDI, Integration with Back-end Information Systems, The Role of Software Agents for B2B EC, Electronic Marketing in B2B, Solutions of B2B EC, Managerial Issues, Electronic Data Interchange (EDI), EDI: The Nuts and Bolts, EDI & Business.

Unit III

Intranet and Extranet: Automotive Network Exchange, The Largest Extranet, Architecture of the Internet, Intranet, and Extranet, Intranet Software, Applications of Intranets, Intranet Application Case Studies, Considerations in Intranet Deployment, The Extranets, The Structure of Extranets, Extranet Products & Services, Applications of Extranets, Business Models of Extranet Applications, Managerial Issues.

Unit IV

Electronic Payment Systems: Is SET a Failure, Electronic Payments & Protocols, Security Schemes in Electronic Payment Systems, Electronic Credit Card System on the Internet, Electronic Fund Transfer and Debit Cards on the Internet, Stored-Valued Cards and E-Cash, Electronic Check Systems, Prospect of Electronic Payment Systems, Managerial Issues.

Public Policy: From Legal Issues to Privacy: EC-Related Legal Incidents, Legal, Ethical & Other Public Policy Issues, Protecting Privacy, Protecting Intellectual Property, Free Speech, Internet Indecency & Censorship, Taxation & Encryption Policies, Other Legal Issues: Contracts, Gambling & More, Consumer & Seller Protection in EC.

Unit V

Internet Protocols, Web-Based client/ Server, Internet Security, Selling on the Web, chatting on the Web, Multimedia delivery, Analyzing Web Visits, Managerial issues.

Economics, Global & Other Issues in EC: Competition in Market space, Some Issues in Digital Economy and Success Factors, Impacts on Industry Structure, Intermediaries, and Others, virtual Communities, Global Electronic Commerce, Electronic Commerce in Small companies, Research in EC, The Future of EC

TEXT BOOKS/ REFERENCE BOOKS

1. David Whiteley, “E-Commerce”, Tata McGraw Hill, 2000 Eframi Turban, Jae Lee, David King, K. Michale Chung, “Electronic Commerce”, Pearson Education, 2000

BCA-507 Computer Advance Internet Programming Lab	Maximum Marks	50 (Cr. – 1)
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

List of Experiments

1. Web page creation using HTML
    i) To embed an image map in a web page
    ii) To fix the hot spots
    iii) Show all the related information when the hot spots are clicked.
2. Web page creation with all types of Cascading style sheets
3. Client side scripts for validating web form controls using DHTML
4. Java programs to create applets
    i) Create a color palette with matrix of buttons
    ii) Set background and foreground of the control text area by selecting a color from color palette.
    iii) In order to select foreground or background use check box control as radio but-tons.
    iv) To set background images.
5. Programs in java using servlets
6. Programs in java to create three-tier applications using JSP and Databases
    i) for conducting online examination
    ii) for displaying students mark list.
7. Programs using XML-schema-XSLT/XSL
8. Programs using AJAX
9. Implementation of web services and databases.

BCA-508 Advance Java Lab	**Maximum Marks**	**50 (Cr. – 1)**
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

List of Experiments

1. Write a program to show How Exception Handling is in JAVA
2. Write a program to show Inheritance
3. Write a program to show Polymorphism
4. Write a program to show Interfacing between two classes
5. Write a program to Add a Class to a Package
6. Write a program to demonstrate AWT.
7. Write a program to Hide a Class
8. Write a program to implement String Operation
9. Write a program to show “HELLO JAVA ” in Explorer using Applet
10. Write a Program to calculate mathematical operation using JSP
11. Write a program to demonstrate multithreading using Java.
12. Write a program to demonstrate applet life cycle.

BCA 509 Summer Project Seminar

BCA 510 Industrial Visit

BCA- VI SEMESTER

BCA-601 Advance Computer Network	**Maximum Marks**	**100 (Cr. – 4)**
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Foundation: Building a Network, Getting Connected: encoding, links, framing error detection, Reliable transmission, Ethernet &MAC. Internetworking: Switching & Bridging, Basic Internetworking, Routing, Implementation, Performance.

UNIT – II

Advance Internetworking: The global Internet, Multicast, MPLS, and Routing among mobile Devices. End to End Protocols: Simple Demultiplexer, Reliable Byte Stream (TCP), RPC, RTP

UNIT – III

Congestion Control & Resource Allocation: Issues, Queuing Disciplines, TCP Congestion Control Avoidance mechanisms.

UNIT – IV

Quality of Service. Multimedia Networking: Multimedia Networking applications, RTSP, RTCP, SIP, H.323. And discussion of Various RFC of SIP 3261.

UNIT – IV

Network Security: Cryptographic Building Blocks, Symmetric Key Encryption, Public Key Encryption, authentication protocols, PGP, TLS, SSL, Firewalls, Intrusion Detection

TEXT BOOKS/ REFERENCE BOOKS

1. Computer Networks, Fifth Edition: A Systems Approach (The Morgan Kauf Man Series).
2. Computer Networking: A Top Down Approach (Fifth Edition), James F. Kurose.
3. W. Stallings, Networks Security Essentials: Application & Standards, Pearson

BCA-602 Management Information System	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Basics of MIS: Introduction, Structure of MIS, Purpose, Objectives, Benefits, Limitations, Requirements, Characteristics, Role of MIS in Organizations, Nature and Scope, Foundation of IS- IS classification, General Support System, Information system for decision making , The role of system analyst , Data base management system.

UNIT – II

System Study: SDLC, System Designing models, System Analysis Tools : DFD. Decision Trees, Decision Tables, Structured English, Data Dictionary along with its Pros and Cons.

UNIT – III

Trends and applications of IS: Information Concepts:- Types, Information Quality, Dimensions of Information.System Concepts- Kinds of System, System Related Concepts. Information Technology, a Managers overview, managerial overview of Computer hardware & software, Telecommunication, Database management.

UNIT – IV

IS for Business Applications: Business application of Information Technology, internet & electronic commerce, intranet, extranet & Information system for managerial decision support system and Types of Decisions in Organization, information system for strategic advantage.

UNIT – V

Advanced Concepts of IS: Enterprise Resource planning, Supply chain management, Customer Relationship Management (CRM), Procurement Management System, Implementation Process, System Maintenance and System Evaluation, IS Security and Ethical responsibility

TEXT BOOKS/ REFERENCE BOOKS:

1. Brian, “Management Information System”, TMH.
2. Alter, “Information Systems: A Management Perspective” Addison Wesley
3. Jawadegar, “Management Information System”, TMH.
4. Bansal, “Information System Analysis & Design”, TMH.

BCA-603 Artificial Intelligence	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Introduction to AI, AI Applications. AI techniques, Criteria for success. Problems solving in AI.Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem.

UNIT – II

Heuristic search techniques: Generate and test, hill climbing, best first search technique. A* Algorithm, AO* Algorithm.

UNIT – III

Knowledge representation: Definition and importance of knowledge, Knowledge representation, various approaches used in knowledge representation. Using Predicate and Propositional Logics: Representing Simple Facts in logic, representing instances and is a relationship.

UNIT – IV

Learning: Introduction learning, Rote learning, learning by taking advice, learning in problem solving, learning from example-induction, Explanation based learning. Expert System: Introduction, Expert system shells, Example of Expert System.

UNIT – V

Introduction to NLP, Steps of NLP, LISP and other AI Programming Language.

TEXT BOOKS/ REFERENCE BOOKS:

1. Rich. E and Knight .K, "Artificial intelligence", TMH, 2nd ed., 1999.
2. Patterson . D.W., "Introduction to AI and Expert Systems", PHI, 1999
3. Nilsson . Nils J ,"Artificial Intelligence -A new Synthesis" 2nd Edition (2000), Harcourt Asia Ltd.
4. Charnaik . E and McDermott . D., "Introduction to artificial Intelligence", Addison- Wesley Publishing Company.

BCA-604A .Net Programming	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I An overview of the .NET framework ,.Net Architecture,components of Framework: (CLR), CTS, CLS, the .NET Framework class library (FCL), Know the role of the Common Intermediate Language (CIL), Platform independent .NET., Languages supported by .NET will also be discussed. An introduction to Visual Studio .NET. , Namespaces

UNIT – II What is C#, why C#, characteristics of C#, rules for writing, declaration and initializing variables, scope of the variables, converting variable types. , Statements and Expressions ,Operators, Branching, Looping, Methods, Arrays, Strings, Structures, Enumerations. C# - Types , Reference Types ,Value Types ,Boxing ,

UNIT – III Classes and Objects: Constructors .Reference Types ,Object Oriented Programming Access Modifiers,, Inheritance, operator overloading, function overloading,method overriding, constructor invocation in inheritance, Polymorphism, sealed class, sealed method, virtual method,Abstract class and method,Interfaces, Parameter passing making, nullable types, contatntdata,readonly fields, static constructor,static class, method and properties in class.

UNIT – IV Errors and Exceptions.:Handling errors and throwing exceptions The Root object class. DateTime and Time Span Class,overriding object class method, Delegates, Events, System.collection, System.I.O namespace.:DirectoryInfoClass, FileInfo Class, streams

UNIT – V Application Development on .NET: Building Windows Applications,Introduction to ADO.Net Connected Architecture , Disconnected Architecture , Windows Form :Introduction to Windows Form ,Form Controls ,User Define Controls ,Accessing Data with ADO.NET. Updating retrieving and deleting data using LINQ to SQL

TEXT BOOKS/ REFERENCE BOOKS:

1. C# 4.0 in Nut shell by O' Reilly
2. Beginning Visual C# by Rocks Publicatio

BCA-604B Fundamental of PHP	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT I Introduction of web applications.Introduction to web designing with HTML and Cascaded Style Sheets. Concept of Client Side Scripting and Server Side Scripting. Static website vs Dynamic website development. Web Servers: Local Servers and Remote Servers.

UNIT II Introduction to PHP, Installing Web servers, PHP configuration in IIS &Apache Web server. Data types in PHP, Variables, Constants, operators and Expressions. PHP Operator: Conditional Structure - if, switch case & Looping Structure - for, while, do while, foreach

UNIT III Introduction to Arrays: Initialization of an array, Iterating through an array, Sorting arrays, Array Functions, Functions: Defining and Calling Functions, Passing by Value and passing By references, Inbuilt Functions: String Function, Math Function, Date Function and Miscellaneous Function.

UNIT IV Working with Forms: Get and Post Methods, Query strings, HTML form controls and PHP, Maintaining User State: Cookies, Sessions and Application State. Working with Files: Opening and Closing Files, Reading and Writing to Files, Getting Information on Files

UNIT V PHP Database Connectivity: Introduction to MYSQL, Creating database and other operations on database, connecting to a database, Use a particular database, Sending query to database, Parsing of the query results, Checking data errors.

Text/ Reference Books:

1. Steven Holzner " PHP: The Complete Reference"
2. Tim Converse, Joyce Park "PHP Bible", 2nd Edition
3. Dave W. Mercer, Allan Kent, Steven D. Nowicki, David Mercer, Dan Squier, Wankyu Choi with Heow Eide-Goodman, Ed Lecky-Thompson, Clark Morgan "Beginning PHP5"

BCA-604C Principles of Accounting	**Maximum Marks**	**100 (Cr. – 4)**
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

Unit1 I

Accounting: Definition, Need for Accounting, Learning Objectives, Functions of Accounting,

Basic Components of Financial Statements-Account classes, Account groups, Accounts, Subsidiary accounts, Basic accounting equation.

Unit II

Branches of Accounting-Financial Accounting, Cost Accounting and Management Accounting. Systems of Book Keeping, Journal, Rules of Debit and Credit, Journal Entries, Ledger Posting, Trial Balance, Revenue & Capital Expenditure, Cash Book and other Subsidiary Books.

Unit-III

Journalizing Transactions Related to Expenses- Cost accounting accounts, Cost accounting records, Transferring cost accounting records to financial accounting by using transfer accounts.

Unit-IV

Rectification of Errors, Depreciation Accounting, Preparation of Final Accounts with and without adjustment including Manufacturing Accounts.

Unit-V

Computer Accounting: Accounting Package, Tally Micro Studies. Bank Reconciliation Statement: Advantages of Keeping Bank Account Cause of Difference, Meaning and Objective of Reconciliation, Technique for Preparation.

TEXT BOOKS/ REFERENCE BOOKS:

1. Grewal . T.S ; Double Entry Keeping ; 21st Edition ; Sultan chand Publications ; 2006
2. Tulsian . P.C ; Financial Accounting ; Pearson Education.
3. Sharma & Bhardwaj; Book keeping & Accounting, RBD; Jaipur.
4. Sharma, Shah & Agarwal; Financial Accounting, Shiv Book Depo; Jaipur.

5. Agarwal, Shah, Goyal & Sharma; Fundamentals of Accounting, Vol. I, NBH; New Delhi.
6. Maheshwari S.N & S.K. Maheshwari ; An Introduction to Accountancy ; Eighth Edition ; Vikas Publishing Company 2003.
7. Monga J.R ; Girish ahuja ; Financial Accounting ; Eighteenth edition ; Mayoor Paper Backs ;2003

BCA-604D Intellectual Property Rights	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

Unit1 I

Copyright-I

a. Nature and Meaning

b. Scope of protection

Unit II

Copyright-II

a. Procedure for protection

b. Enforcement and Remedies

Unit-III

Patents

a. Nature and Meaning

b. Scope of protection

c. Procedure for protection

d. Enforcement and Remedies

Unit-IV

Trademarks

a. Nature and Meaning

b. Scope of protection

c. Procedure for protection

d. Enforcement and Remedies

Unit-V

Designs

a. Nature and Meaning

b. Scope of protection

c. Procedure for protection

d. Enforcement and Remedies

Suggested Readings:

1. R. Anita Rao & Bhanoji Rao: Intellectual Property A Primer

2. Nair and Kumar: Intellectual Property Rights (N. Delhi: Allied, 1994);

3. Narayanan, P.: Patent Law (Kolkata: Eastern Law House, 998)

4. N.S. Gopal Krishman & T.G. Agitha: Principal of Intellectual Property

5. Cornish, W. R. : *Intellectual Property* (London: Sweet & Maxwell, 1996);

6. Robert A. Gorman and Jane C. Ginsburg: Copyright: Cases and Materials (New York: Foundation Press, 2002).

7. Stewart, S.M.: International Copyright and Neighbouring Rights (London: Butterworth's, 1983)

Recommended Cases:

- R.C. Anand v. Manager, Deluxe Films, AIR 1978 SC 1513
- M/s S.M. Dye Chem. Ltd. v. M/s Cadbury (India), AIR 2000 SC 2114 : (2000) 5 SCC 573
- M/s National Research Development Corporation v. M/s Silicon Ceramies Ltd., AIR 1998, Delhi 52
- State of Tamil Nadu v. Thiru Marugan Brothers, AIR 1988 SC 336
- Indian Performing Right Society Limited v. Eastern Indian Motion Picture Association, AIR 1977 SC 1443
- Vishnu Das v. Sultan Tobbaco Co. Ltd. Haderabad, AIR 1996 SC 2275
- K.R. Chinna Krishna Chettiar v. Sri Ambal and Co., AIR 1970 SC 146
- Express Newspaper v. Liverpool Daily Post (1983) F.S.R. 32 (C.A.)
- Beldf v. Press dram (1973) 1 All. E.R. 241

BCA-605A Social Implications of IT	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT-I

Introduction: Importance of social dimensions of science and technology, concept of demystification, definition of the term IT, Its advantages and disadvantages, trends in IT, IT and quality of life.

UNIT-II

Future trends of IT: AI, Robots, Neural Networks, Fuzzy logic, Virtual Reality, Developments in hardware and software, economic role of IT (Banking and Finance, Stock market), IT and Manufacturing, IT in Retail Marketing, Presentation on future trends.

UNIT-III

Social and Technical choice reshaping the people, concept of digital factors affecting nature, initiative to bridge digital divide, debate on digital divide.

UNIT-IV

IT in office automation, concept of Intelligent house hold, IT role in learning and education, focus on alternative ways in which IT professionals, IT and home automation.

UNIT-V

Privacy and surveillance in everyday life, impact of IT on culture, ethical issue of IT, concept of software piracy.

TEXT BOOKS/ REFERENCE BOOKS

1. Dutton, W.H. "Society on the line: Information politics in digital age" , Oxford University Press, 1999.
2. Castell M., " The Internet Galaxy" Oxford University Press,
3. Teich, A.H., "Technology and the future", 8th edition, Network St. Martin Press.

BCA-605B Mobile Computing	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Introduction: Applications, A short history of wireless communications, a market for mobile communications, some open research topics, a simplified reference model.

UNIT – II

Wireless transmission: Frequency for radio transmission, signals, Antennas, Signal propagation, multiplexing, modulation, cellular systems.

UNIT – III

GSM: Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

UNIT – IV

(Wireless) Medium Access Control : Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA. Mobile Network Layer: Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunneling and encapsulation, optimizations), Dynamic Host Configuration Protocol (DHCP).

UNIT – V

Mobile Transport Layer : Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

TEXT BOOKS/ REFERENCE BOOKS

1. Jochen Schiller,“Mobile Communications”,Addison-Wesley. (Chapters 4,7,9,10,11),second edition, 2004.
2. Stojmenovic and Cacute, “Handbook of Wireless Networks and Mobile Computing”, Wiley, 2002, ISBN 0471419028. (Chapters 11, 15, 17, 26 and 27)
3. T. Rappaport, "Wireless Communication: Principles and Practice", Pearson Education.
4. Mobile computing,Raj Kamal,Oxford University press.
5. Adelstein, Frank, Gupta, Sandeep KS, Richard III, Golden , Schwiebert, Loren, “Fundamentals of Mobile and Pervasive Computing”, ISBN: 0071412379, McGraw-Hill Professional, 2005.

BCA-605C Cyber Ethics & Crime	Maximum Marks	100 (Cr. – 4)
	Theory Paper Marks	70
	Internal Assessment Marks	30
	Practical Marks	Not Applicable
	No. of Lectures	30

Unit I

Introduction to Cyber Law Evolution of Computer Technology, emergence of Cyber space. Cyber Jurisprudence, Jurisprudence and law, Doctrinal approach, Consensual approach, Real Approach, Cyber Ethics, Cyber Jurisdiction, Hierarchy of courts, Civil and criminal jurisdictions, Cyberspace- Web space, Web hosting and web Development agreement, Legal and Technological Significance of domain Names, Internet as a tool for global access.

Unit II

Information technology Act Overview of IT Act, 2000, Amendments and Limitations of IT Act, Digital Signatures, Cryptographic Algorithm, Public Cryptography, Private Cryptography, Electronic Governance, Legal Recognition of Electronic Records, Legal Recognition of Digital Signature, Certifying Authorities, Cyber Crime and Offences, Network Service Providers Liability, Cyber Regulations Appellate Tribunal, Penalties and Adjudication.

Unit III

Cyber law and related Legislation Patent Law, Trademark Law, Copyright, Software – Copyright or Patented, Domain Names and Copyright disputes, Electronic Data Base and its Protection, IT Act and Civil Procedure Code, IT Act and Criminal Procedural Code, Relevant Sections of Indian Evidence Act, Relevant Sections of Bankers Book Evidence Act, Relevant Sections of Indian Penal Code, Relevant Sections of Reserve Bank of India Act, Law Relating To Employees And Internet, Alternative Dispute Resolution , Online Dispute Resolution (ODR).

Unit IV

Electronic Business and legal issues: Evolution and development in E-commerce, paper vs paper less contracts E-Commerce models- B2B, B2C,E security.

Unit V

Application area: business, taxation, electronic payments, supply chain, EDI, E-markets Emerging Trends.

TEXT BOOKS/ REFERENCE BOOKS

1. Cyber Laws: Intellectual property & E Commerce, Security- Kumar K, dominant Publisher.
2. Information Security policy &implementation Issues, NIIT, PHI.
3. Cyber CRIME notorious Aspects of the Humans & net Criminals activity in Cyber World
4. Barna Y Dayal D P Dominant Publisher.
5. Cyber Crime Impact in the new millennium, Marine R.C. Auther press
6. Spam Attack, Cyber Stalking & abuse, Barna Y, Dayal D P Dominant publisher
7. Frauds & Financial criouses in Cyber space, Barna Y, Dayal D P , Dominant publisher
8. Information Security , NIIT: PHI

BCA-605D Entrepreneurship	Maximum Marks	100 (Cr. – 4)
	External Assessment Marks	70
	Internal Assessment Marks	30
	Credit	**4**
	No. of Lectures	40

UNIT – I

Introduction to Entrepreneurship: Evolution of entrepreneurship from economic theory Managerial and entrepreneurial competencies.Entrepreneurial growth and development.

UNIT – II

Creativity and Innovation: Creativity and Innovation: Concepts Shifting Composition of the Economy Purposeful Innovation & the 7 Sources of Innovative Opportunity The Innovation Process.

Innovative Strategies : Strategies that aim at introducing an innovation. Innovation &entrepreneurship: Can they work together? Planning-incompatible with Innovation &entrepreneurship.

UNIT – III

Entrepreneurial Motivation: Need for continuous learning & relearning Acquiring Technological Innovation Entrepreneurial motivation (nAch story) Achievement Motivation in Real life.. Case Study.

UNIT – IV

International Entrepreneurship: Concepts and Nature of International Entrepreneurship.The changing International environment. Ethics and International Entrepreneurship. Strategic Issues in International Entrepreneurship.

UNIT – V

Problem Identification and Problem Solving: Problem Identification. Problem solving.Innovation and Diversification

BCA-606 .Net Lab/ PHP Lab	**Maximum Marks**	**50 (Cr. – 1)**
	External Assessment Marks	20
	Internal Assessment Marks	30
	Credit	**1**
	Lab Hour	2

List of Experiments :- .Net Lab

Q.1 Write a C# Program to Get a Number and Display the Number with its Reverse

Q.2 Write C# Program Counts number of Vowels and consonants from a given String.

Q.3 Write a C# Program Demonstrates Jagged Arrays.

Q.4 Write a Program in C# to multiply two matrices of size 3*3.

Q.5 Write a Program to implement Add, Less and multiply operation for Money, design Money class.

Q.6 Write a program in C# to implement operator over loading to overload;- '+' , '-' , '*' and / operators.

Q.7. C# Program Demonstrates Properties of the Class. Here it demonstrates how properties are declared and used.

Q.8 Write a C# program to keep records and perform statistical analysis for a class of 20 students. The information of each student contains ID, Name, Sex, quizzes Scores (2 quizzes per semester), mid-term score, final score, and total score. The program will prompt the user to choose the operation of records from a menu

Q.9 Write a program to implement constructor invocation in multilevel inheritance.

Q.10 Write a C# Program Demonstrates IndexOutOfRange Exception.

Q.11 Write a program to implement delegates with multicasting for three methods of arithmetic operation i.e. sum, divide and multiplication of tow integers.

Q.12 Write a program to create a data file that contains roll no, Name and marks of student. The program should read values until -1 is entered as a roll no. And then write code to read and display contents of student data.

Q.13 Write a program to store name of product with price and display them using SortedList.

Q.14. Write a program to implement abstract class and inheritance.

Q.15 Write a GUI program to create a simple Text Editor. Your editor has the following basic functions:

-A user can choose a file to open

-A user can save the text to the existing file.

-A user can save the text in a new file name.

Q.16 Create a Form that receives the user name, address, date, nationality, country preferred for working and skill sets from the user and stores . The country preferred data should appear in a dropdown list whereas; others should be entered in a textbox. Validate all the

controls. The date should appear between “1/1/1900” and “1/1/2090”. When submit the values the whole entries should be displayed on a label and ask for user to confirm by **Write a simple Windows Forms MessageBox statement.**

Q.17 Create a phoneBook application Oledb data provider. The application contain the following feature:

- Add a new record to phone book
- Delete a record
- Update the th number
- Display phone number of a person

List of Experiments :-PHP LAB

Experiment 1: Design the following static web pages required for online book store.

a) **Home page: -** the static home page must contains three pages
b) **Top: -** logo and college name and links to homepage, login page, registration Page, catalogue page and cart page
c) **Left: -** at least four links for navigation which will display the catalogue of Respective links
d) **Right: -** the pages to links in the left frame must be loaded here initially it Contains the description of the website

Experiment 2: Create registration and cart page in the previous created web site.

Experiment 3: Write a java script to validate the following fields in a registration page

a) userName (should contains alphabets and the length should not be less than 6 characters)
b) userPassword (should not be less than 6 characters)
c) userEmail (should not contain invalid addresses)
d) userCity (should select city from drop down)
e) userGender (Should select gender)

Experiment 4: Implement CSS on the above create WebPages.

Experiment 5: Write an XML file which displays the book details that includes the following:

1) Title of book 2) Author name 3) Edition 4) Price Write a DTD to validate the above XML file and display the details in a table.

Experiment 6: Create a php program to demonstrate the different file handling methods.

Experiment 7: Create a php program to demonstrate the different loops in php.

Experiment 8: Create a php program to demonstrate the different predefined function in array, Math.

Experiment 9: Create a php program to demonstrate the different predefined function in Data & Regular Expression, date.

Experiment 10: Create a HTML form and process the HTML form in PHP.

Experiment 11: Create a php program to connect to MySQL Server.

Experiment 12: Create a php program to execute more SQL queries.

BCA 607 Major Project

BCA 608 Seminar

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