Faculty of Computer Application & IT and Science

Study and Evaluation Scheme

Of

Bachelor of Computer Application (Honors)

B.C. A. (Hons.)

(Applicable w.e.f Academic Session 2013-16 till revised)

AKS UNIVERSITY, SATNA

Study and Evaluation Scheme

AKS University, Satna

Sherganj, Panna Road, Satna (MP) 485001

Study & Evaluation Scheme
of
Bachelor of Computer Applications (Honors)
SUMMARY

Programme :	BCA (Hons.)
Duration :	Three year full time (Six Semesters)
Medium :	Hindi & English Both
Minimum Required Attendance :	75 %
Maximum Credits:	**154**

Evaluation Assessment :	Internal	External	Total
	50	100	150

Internal Evaluation (Theory/ Practical Papers)

	Sessional-I	Sessional-II	Continuous Assessment & attendance
	10	10	10+20= 30

Duration of Examination :	External	Internal
	3 hrs.	2 hrs

To qualify the course a student is required to secure a minimum of 36% marks in aggregate including the semester end examination, internal assessment evaluation (Both theory & Practical Papers)

A candidate who secures less than 36% or Grade '**D**' of marks in a Subject/Paper(s) shall be deemed to have failed in that Subject/Paper(s). In case a student has secured less than 36% or Grade '**R**' in Subject/Paper(s), he/she shall be deemed to re-appear (ATKT Examination) in Subject/Paper(s) to achieve the required percentage (Min. 36%) or grade (Min. D) in the Subject/Paper(s).

Question Paper Structure

1. *The question paper shall consist of 26 questions in three Sections. Out of which Section-A shall be of Objective type 10 questions and will be compulsory. (weightage 2 marks each).*
2. *Section-B shall contain 10 Short answer type questions and students shall have to answer any eight (weightage 5marks each).*
3. *Out of the remaining six question s are long answer type questions, student shall be required to attempt any four questions. The weightage of Questions shall be 10 marks each.*

Faculty of Computer Application & Information Technology and Science

Department of Computer Application and IT

BCA (Hons)
I Semester
TEACHING AND EXAMINATION SCHEME

S.NO.	Subject Code	SUBJECT/PAPER	L	T	P	CREDIT
1	42CA101	Introduction to Computer and Office Tools	3	1	0	4
2	42CA102	Fundamental of C Programming	3	1	0	4
3	42EV103	Ecology & Environmental Studies	3	0	0	3
4	42MS104	Mathematics-I (Discrete Mathematical Structure)	3	1	0	4
5	42SD105	SSD-Functional English-I	3	0	0	3
6	42CA106	Digital Electronics	3	1	0	4
1	42CA151	Introduction to Computer and Office Tools LAB	0	0	3	2
2	42CA152	Fundamental of C Programming LAB	0	0	3	2
		TOTAL CREDIT	18	4	6	26

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BCA (Hons)
II Semester
TEACHING AND EXAMINATION SCHEME

S.NO.	Subject Code	SUBJECT/PAPER	L	T	P	CREDIT
1	42CA201	Advanced C Programming	3	1	0	4
2	42CA202	Operating System	3	1	0	4
3	42CA203	Multimedia Tools and Applications	3	1	0	4
4	42MS204	Mathematics-II (Algebra)	3	1	0	4
5	42SD205	SSD-Functional English-II	3	0	0	3
6	42SS203-H/I	Spiritual Studies(HIndusim/Islam)	3	0	0	3
1	42CA251	Advanced C Programming LAB	0	0	3	2
2	42CA252	Multimedia Tools and Applications LAB	0	0	3	2
		TOTAL CREDIT	18	4	4	26

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BCA (Hons)
III Semester
TEACHING AND EXAMINATION SCHEME

S.NO.	Subject Code	SUBJECT/PAPER	L	T	P	CREDIT
1	42CA301	Data Structure in C	3	1	0	4
2	42CA302	Object Oriented Programming in C++	3	1	0	4
3	42CA303	Computer Network	3	1	0	4
4	42CA304	Computer Organization and Architecture	3	1	0	4
5	42SD305	SSD-Presentation Skill	0	0	2	1
6	42MT306	Principles and Practice of Management	3	0	0	3
1	42CA351	Data Structure in C LAB	0	0	3	2
2	42CA352	Object Oriented Programming in C++ LAB	0	0	3	2
3	42CA353	Computer Network LAB	0	0	1	1
		TOTAL CREDIT	15	4	9	25

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BCA (Hons)
IV Semester
TEACHING AND EXAMINATION SCHEME

S.NO.	Subject Code	SUBJECT/PAPER	L	T	P	CREDIT
1	42CA401	Database Management System	3	1	0	4
2	42CA402	Java Programming	3	1	0	4
3	42CA403	Cyber Security and Laws	3	1	0	4
4	42CA404	Computer Graphics	3	1	0	4
5	42CA405	Linux and Shell Programming	3	1	0	4
6	42CA406	SSD	0	0	2	1
1	42CA451	Linux and Shell Programming LAB	0	0	2	1
2	42CA452	Java Programming LAB	0	0	3	2
3	42CA453	Project LAB	0	0	3	2
		TOTAL CREDIT	15	5	12	26

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BCA (Hons)
V Semester
TEACHING AND EXAMINATION SCHEME

S.NO.	Subject Code	SUBJECT/PAPER	L	T	P	CREDIT
1	42CA501	Web Technology	3	1	0	4
2	42CA502	Information System and Analysis	3	1	0	4
3	**Elective-I (Choose any one)**		3	1	0	4
	42CA503-A	Artificial Intelligence				
	42CA503-B	Cryptography and Network Security				
5	42AC504	Accounting With Tally	3	1	0	4
6	42CA505	Management Information System	3	1	0	4
1	42CA551	Web Technology LAB	0	0	3	2
2	42CA552	Accounting With Tally LAB	0	0	2	1
3	42CA553	Minor Project LAB	0	0	3	2
		TOTAL CREDIT	15	5	6	25

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BCA (Hons)
VI Semester
TEACHING AND EXAMINATION SCHEME

S.NO.	Subject Code	SUBJECT/PAPER	L	T	P	CREDIT
1	42CA601	Animation Tools	3	1	0	4
2	**Elective –II (Choose any one)**		3	1	0	4
	42CA602-A	ASP.NET with C#				
	42CA602-B	Advanced Java Programming				
3	42CA603	Enterprise Resource Planning	3	1	0	4
1	42CA651	Major Project LAB	0	0	20	10
2	42CA652	Elective II LAB	0	0	3	2
3	42CA653	Animation Tools LAB	0	0	3	2
		TOTAL CREDIT	9	3	26	26

OBJECTIVE: This subject covers combinational and sequential logic circuits. Topics include number systems, Boolean algebra, logic families, and other related topics. Upon completion, students should be able to construct, analyze, verify and troubleshoot digital circuits using appropriate techniques.

UNIT 1
Number systems and Arithmetic Different number systems and their inter conversions. Binary arithmetic: Binary addition, subtraction, multiplication and division. Hexadecimal arithmetic: Addition, subtraction, multiplication and division. Binary subtraction suing 1's complement, 2's complement method, overflow, underflow, codes, fixed point representation, floating point representation.

UNIT 2
Boolean algebra and logic gates postulates of Boolean algebra theorems of Boolean algebra: Complementation, commutative, AND, or. Associative, Distributive, Absorption laws, De Morgan's theorems, reducing Boolean expressions, Logic gates: AND, OR, NOT, Ex-OR, EX-NOR, NAND and NOR as universal gates.

UNIT 3
Minimization techniques Introduction to SOP and POS minters, midterms, K-map, Kmap for 2, 3, 4 variables, don't care condition, Combinational Circuits Half Adder and full Adder Binary Parallel Adder Half Subtract or, full sub-tractor, multiplexer and de-multiplexer, decoder, encoder.

UNIT 4
Flip Flops Introduction: RS FF Clocked RS FF, DFF Triggering preset and clear JK FF, TFF, Race around condition Master Slave FF.

UNIT 5
Counters Introduction: Asynchronous / Ripple Counter Modules counter, MOD -12 counter Synchronous counter Synchronous serial and synch. Parallel counter BCD counter
Shift registers – Introduction, buffer register serial in serial out, serial in parallel out parallel in serial out, parallel in parallel out.

Advanced Topics: Quinn-McClusky Method

Text Book
1. M. Morris Mano, Digital Design, 3.ed., Prentice Hall of India Pvt. Ltd., New Delhi, 2003/Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2003

References
1. R.K. Gaur, Digital Electronics and Microprocessor, Dhanpat Rai Puplications.

BCA (HONS)
I Semester
Fundamentals of Programming Languages and C Programming

Objective: This course provides students with a comprehensive study of the C programming language which provide programmers with the means of writing efficient, maintainable, and portable code. The lectures are supplemented with non-trivial lab exercises.

UNIT –I
Algorithm: An Introduction, Properties of an algorithm, Classification, algorithm logic, flowchart.
Program design and implementation issues: programming system design technique,
Programming technique, basic constructs of structured programming, modular designing of programs, Creation, compilation, execution of program.
Programming Environment Languages - Low level programming language, Middle level programming language, High level programming language, object code, source code, executable code, Translator - assembler, compiler, and interpreter.

UNIT- II
Introduction to the C Language: The C Language and its Advantages, The Structure of a C Program, Writing and Building an Executable Version of a C Program, Debugging-Examining and Running a C Program, Character set, Constants ,Variables, keywords, identifiers, literals. Storage, classes, type casting.
Basic input & output function – printf( ) and scanf( ), C Instructions And Operators: Types of Instructions, Data Manipulation Instructions, Input/output Instructions, Operators and its different types, Precedence of operators.

UNIT – III
Flow control instructions: decision control instructions, if, if-else, if-else-if, nested if-else, loop control instructions, for loop, while loop, do while, break, continue, case control structure, goto, exit statement.

UNIT –IV
Arrays: what is an array, array declaration, array initialization, accessing individual elements of an array, two dimensional arrays, passing an array element to a function, rules of using an array.
Strings: what are strings, standard library string function strlen(), strcpy(), strcat(), strcmp(), strrev(), 2D array of characters and character input output functions.

UNIT –V
Function: Need of function, declaring function, defining, calling function, types of function, parameter passing.
Structure and Union: Why use structure, declaration of structure, accessing structure elements, how structure elements are stored, array of structure, uses of structure, declaration of Union, accessing Union elements.

Advance topics: Pointer, DMA, Command line arguments, the C preprocessor.

Text Books

1. E. Balagurusamy, "Programming in ANSIC C", Tata McGraw Hill, 2002

Reference Books

1. Yashavant Kanetkar, "Let Us C" – Seventh Edition, BPB Publications, 2007

List of C practical:

1. Write a C program to display Your Name, Address and City in different lines.
2. Write a C program to find the area of a circle using the formula. Area = PI * r2
3. Write a C program to find the maximum from given three nos.
4. Write a C program to find that the accepted no is Negative, Positive or Zero.
5. Write a C program to convert centigrade into Fahrenheit. Formula: C= (F-32)/1.8.
6. Write a C program to find the sum of digits of accepted no.
7. Write a C program to find the sum of first 100 odd nos. and even nos.
8. Write a C program to display first 25 Fibonacci nos.
9. Write a C program to find factorial of accepted nos.
10. Write a C program to print the accepted no and its reverse no.
11. Write a C program to find whether the accepted string number is palindrome or not.
12. Write a C program to find x1+x2+x3+x4+ ….+xn.
13. Write a C program to convert decimal to binary.
14. Write a C program to arrange the accepted numbers in ascending order and descending order.
15. Convert given line into upper case or lower case character as user want. Use switch statement for the choice of case.
16. Check accepted integer is prime number or no.
17. Convert accepted integer into word. For Example 55 = fifty five.
18. Convert accepted DATE into word. For Example 12/12/1972 = 12th December 1972.
19. Find the frequency of entered different integer nos.
20. Accept two different arrays, merge it and make it sort in ascending order.
21. Print 3 students detail of R-no, name, address, city, phone on screen. Use structure.
22. Find the NPR, NCR with using User Defined Function. NPR = N! / (N-R)! NCR = N! /(R!*(N-R).
23. Swap the values of two different numbers using UDF.
24. Display this kind of output on screen.
C
CP
CRR
.   .
CPROGRAMING
.
.
CPR
CP
C
25. Display this kind of output on screen.
1
01
101

26. Display this kind of output on screen.

1

01

101   …

27. Display this kind of output on screen.

1

23

456

78910

…   ………..

90 91

28. Display this kind of output on screen.

*

**

***

****

29. Display this kind of output on screen.

1

121

12321

1234321

123454321

30. Write a program to work as a dos type command using command line argument.

31. Program to show swap of two no's without using third variable.

32. Program to show the use of conditional operator.

33. Program to find that entered year is leap year or not.

34. Program to find whether given no is even or odd.

35. Program to shift inputted data by two bits to the left.

36. Program to use switch statement, Display Monday to Sunday.

37. Program to display arithmetic operator using switch case.

38. Program to show swap of two no's without using third variable.

39. Program to show table of a number using functions.

40. Program to show call by value.

BCA (HONS)
I Semester
Discrete Mathematics Structure

OBJECTIVE: Discrete mathematics, in particular counting and probability, allows students—even at the middle school level—to very quickly explore non-trivial "real world" problems that are challenging and interesting.

UNIT-I:
Set Theory: Element of set, Types of set, Sets, Subsets, Equal Sets, Universal Sets, Finite and Infinite Sets, Operation on Sets, Union, Intersection and Complement of Sets, Cartesian Product, Venn Diagram, Associative Laws, Distributive Laws, De-Morgan's Laws, Duality Partitioning of a Set.

Unit-II
Relation and Function : Types and Composition of relation, Partial Order Relation, Equivalence Relation, Domain and Range, Onto, Into and One-One Function, Composite and Inverse Function, Introduction of Trigonometric, Logarithmic and Exponential Function.

Unit-III
Preposition: Preposition, First Order Logic, Basic Logic Operation, Logical Equivalence, Truth Table, Normal Forms, Predicates and Quantifiers, POSET, Boolean algebra and Logic Gates.

Unit-IV
Dimensional Geometry: Graph Theory, Concepts Graph, Sub graph, Bi-partite graph, Isomorphic Graph, Homeomorphic Graphs, Weighted Graphs, Shortest Paths in weighed graphs(Dijkstra's algorithm), Operations on Graphs, Directed Graph, Matrix Representation On Graphs, Cyclic Graphs, Tree, Rooted Tree, Labeled Graph, Weighted Graph, Decision trees or Sorting Tree, Spanning Tree, Binary Trees, Algorithms- Prim's, Kruskal.

Unit-V
Algebraic Structures: Properties, Semi group, Monide, Group, Abelian Group, Properties of Group,Cyclic Group, Coset Decomposition and Related Theorem.

Advance Topics: Lagrange's Theorem and Euler's Theorem, Permutation Groups.

Text Book
1. "B.R. Thakur" Elementary Abstract Algebra Publication by Ram Prasad and Sons UP in 1996.
2. "Dr.D.C. Agrawa"Discrete mathematics Structure Publication By Shree Sai Prakeshan india in 2002.

Reference Books:
1. Dr M. K. Venketaramen, Dr N.Sridharan, N. Chandarasekaran Discrete mathematics The National publishing Company Chennai.

Objective: This course has been taught to the student to aware them about the computer and how it operates, to make documents.

Unit-I
Introduction to computers:- Definition of Computer, Characteristics of Computers**,** Types of computers   Mini Computers, Micro Computers, Mainframe Computers ,Super Computers, Types of Programming Languages Machine Languages, Assembly Languages, High Level Languages. Memory Types of Memory (Primary & Secondary) RAM, ROM, Secondary Storage Devices FD, CD, HD, Pen drive. **I/O Devices:**-Keyboard, Mouse, Monitors, Scanners, Plotters, LCD, and Plasma Display).

Unit-II
Operating System and Services in O.S., Dos-History, Files and Directories, Internal & External Commands, Types of Operating System, Windows Operating EnvironmentFeatures of MS – Windows, Control Panel,Taskbar, Desktop, Windows Application,Icons,Windows Accessories, Notepad, Paint Brush.

Unit- III
MS Word 2007:– Word basics, formatting text and documents, working with headers, footers and footnotes, tabs, tables and sorting, Working with graphics, templates, and introduction to mail merge.
MS Power Point 2007:- Power Point basics, creating presentation the easy way, working with graphics, Inserting various objects (Picture, Organizational Chart, Audio, Video etc) in slide, Adding Animation effects in slide.

Unit-IV
MS Excel 2007:- Excel basics, rearranging worksheets, excel formatting tips and techniques, Introduction to functions; Excel chart features, working with graphics, Using worksheet as a Database.

Unit-IV
MS Access 2007:- Database creation, screen/form design, Data Export-import. Report generation using wizard, **Introduction to Networking: -** Advantage of Networking: Basic Features, LAN, WAN, MAN, Topologies.
Advance Topics: WWW, Internet.

Text Books:-
1. E Balagurusamy Fundamentals of Computer Tata McGraw Hills Publication.

Reference Books:
1. Manish Mahajan IT Infrastructure & Management Achme learning.

BCA (HONS)
I Semester
ECOLOGY & ENVIRONMENTAL STUDIES
(Compulsory For all Undergraduate Courses)

Unit I

Definition, scope and importance, need for public awareness. Natural resources and associated problems. Forest resources: Use and over-exploitation, deforestation, mining, dams and their effects on forest. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. Land resources : Land as a resource, land degradation, soil erosion and desertification.

Unit II

Food resources : World food problems, effects of modern agriculture, fertilizer-pesticide problems, Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

Unit III

Concept of an ecosystem, Structure and function of an ecosystem. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. introduction, types, characteristic features, structure and function of the terrestrial ecosystem and Aquatic ecosystems.

Diversity, Definition & types, Biogeographical classification of India, Value of biodiversity, Biodiversity at global, National and local levels. Inida as a mega-diversity nation, Hot-sports of biodiversity, Threats to biodiversity, Endangered and endemic species of India, Conservation of biodiversity.

Unit IV

Definition: Cause, effects and control measures of :- Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards, Solid waste Management : Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies, Disaster management: floods, earthquake, cyclone and landslides.

Unit V

Sustainable development, urban problems related to energy Water conservation, rain water harvesting, watershed management, Resettlement and rehabilitation of people; its problems and concerns, Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Environmental legislation, Public awareness. Population growth, Population explosion - Family Welfare Programme. Environment and human health. HIV/AIDS.. Role of Information Technology in Environment and human health.

Suggested Books:

A text book of Environmental Studies, Erach Bharucha, UGC Publication Delhi
A text book of Environmental science: Purohit Shami & Agrawal, Agrobios Student edition Jaipur
A text book of Environmental Studies: Kaushi & Kaushik New age International Publication
Paryavaran Addhyan : MP Hindi Granth Academy
Paryavaran Addhyan : KL Tiwari and Jadhav
Paryavaran Addhyan/Shiksha by: Dr Mahendra Kumar Tiwari University Publication Delhi
Introduction to Environmental Science by Y. Anjaneyulu BS Publication Hyderabad

SSD - FUNCTIONAL ENGLISH-1

1st Semester

B.Tech (Engg.)/B.Tech (Ag.)/B.Tech (BT)/B.Sc.(Hons) Ag./B.Sc
(BT)/B.Pharm/BBA/B.Com/B.com(Hons)/BCA(Hons)/Diploma (Engg.)

INTRODUCTION: Grammar is vital for the efficient use of language in academic as well as social environment. You already know that our speech is made up of sentences. A sentence is the basic unit of the written and spoken language. In this unit we will learn about various structural and functional parts of the sentence, their types ,subtypes and their usage.

Objectives:
- ➢ To enable the students to use verbs in appropriate contexts.
- ➢ To improve students' command of spoken English by practicing the functional language needed in different situations
- ➢ To familiarize the students with the concept of Functional English as a multi-focal   discipline.
- ➢ To enable the students to use English correctly and confidently

UNIT-1

a. Articles: Definite, Indefinite and Zero, Noun: numbers (singular and plural) and Personal Pronouns

b. Introduction to verb :Ordinary and Auxiliary verbs, Regular and Irregular verbs

c.**The Present Tense:** Present Continuous, Simple Present (Form and Use)

UNIT-2

  The Past and Perfect Tenses: Simple Past, The Past Continuous, The Present Perfect, The Present Perfect Continuous, The Past Perfect and The Past Perfect Continuous. (Form and Use)

UNIT-3

 The Future Tense: Future Simple, The future Continuous (Form and Use),Causative Verbs,The Sequence of Tenses.

UNIT-4

Introduction to Modal Auxiliaries (Form and Use)
May and can for Permission and Possibility.
Could for permission in the Past
May ,Might for Possibility.
Can and be able for Ability.
Ought, Should, Must, have to,had to, Need for Obligation.

UNIT-5

 The Conditional Sentences, The Passive Voice; Active Tenses and their Passive Equivalents
 including Modals, Use of Passive Structure.

NOTE: Coverage of 1220 Regular (600) and Irregular Verbs (620) with their meaning and uses.

   (Teachers are required to Introduce 25 verbs from the given verb list in every lecture)

BCA (HONS)
II Semester
Advance Programming in C

OBJECTIVE: Advance C programming allows students improve their program's efficiency, and even allow them to handle unlimited amounts of data and files which are very important for storing information permanently. Students can use graphics programming for developing your own games, in making projects, for animation etc.

UNIT-1
Introduction to pointers: Definition and declaration of pointers, initialization of pointers, basics of pointers, pointer arithmetic, DMA-dynamic memory allocation, pointer to functions, functions, pointer to structure, pointer to array, array of pointers, pointer to 2D array, void pointer.

UNIT-2
String manipulations: String, pointer with string, 2D array of characters, array of pointers of strings, limitation of array of pointers to string, NULL pointer, accessing string without pointers, accessing strings using pointers, string manipulation without string functions, palindrome of string, header files of string and characters., command line arguments.

UNIT-3
File handling: File, text and binary files, various other files, operations on files, random access of file, bof()and eof(), whitespace, functions of file: getc(), put(), fputs(), fgets(), fread(), fwrite(), fprintf(), fscanf(), fseek(), ftell(), rewind(), fopen().

UNIT-4
Graphics Programming: Initialize graphics mode, lines, stylish lines, drawing and filling images, patterns with differences, bar(), filling regular and non-filling regular shapes of palettes and colors, outputting text, justify text, a bit of animation.

UNIT-5
Preprocessor: Preprocessor directives, initialization and use, macros, file inclusion, conditional preprocessors, miscellaneous directives, # error, #line, #, ##, #define, #include.#if,#else,#if -else,#end.

Advance Topics: scheduling algorithm of operating system and convert decimal to binary number using C.

List of practical's:
1. C Program to Create Your Own Header File in C
2. C Program to Read integers into an array and reversing them using Pointers
3. C Program to Count Number of words, digits, vowels using pointers
4. C Program to Swap Two Numbers / Variables using Pointer
5. Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc() function.
6. Write a C program to access structure's member through pointer.
7. Find Largest Element Using Dynamic Memory Allocation
8. Suppose 6 names are stored in an array of pointers names[] as shown below:
Char *name[]={"Santosh","Amol","Santosh Jain","Kishore","Rahul","Amolkumar"};
Write a program to arrange these names in alphabetical order.
9. C Program to add two numbers using Command Line
10. Code for Program to sort a list in alphabetic order using pointers in C
11. Program to check whether a string is palindrome or not using pointer
12.C Program to Count No of Lines, Blank Lines, Comments in a given Program

13. Write a program to read data from keyboard, write it to a file named STUDENT again read the same data from STUDENT file and write it into DATA file. Same data should be displayed on the screen

14. Write a program to perform write and read operation on a binary file.

15. Write a program to copy the content of a text file into another file.

16. Write a program to check the number is even or odd using #if-#else statement.

17. Write a program to show the use of Miscellaneous Directives.

18. Write a program draw circles in circles

19. Write a program to draw shapes using c graphics

20. Write a program C program to move a car.

Text Books:
The Complete Reference 'C' Tara MC Graw Hill Fourth Edition Herbert Schildt

Reference Books:
Programming Language in 'C' GotfriedTata MC Graw Hill.

Small projects in C :
1. Library management
2.Snake Game
3.Quize Game
4. Tiktak game

Objective:Linear Algebra and its Applications contribute new information or new insights to matrix theory and finite dimensional linear algebra in their algebraic, arithmetic, combinatorial, geometric, or numerical aspects.

Unit-1
Determinants:
Introduction of Determinant, Minor Cofactors and properties of Determinant, Factor Theorem, special types of Determinants, Application of Determinants, Solution of Simultaneous Linear Equation by Determinants(Cramer's Rule).

Unit-2
Algebra of Matrices:
Definition, various types of matrices, Addition, Subtraction, Multiplication of matrices, Properties of matrix multiplication, Adjoint of Square matrix, Inverse of matrix, Rank of matrix, Normal form (Canonical form).

Unit-3
Consistency of linear system of equation and their solutions:
Solution of Simultaneous Equation, Types of Linear Equation, Homogeneous Equations, Cramer's Rule, Linear Dependence and Independence of Vectors, Eigen values, Eigen Vector, Cayley-Hamilton Theorem, and Orthogonal Vectors.

Unit-4
Complex Number:
Introduction of Complex Numbers, Geometrical Representation of Imaginary Numbers, Argand Diagram, Equal Complex Number, Addition, Subtraction, Power of i, Multiplication, Conjugate of a complex Number, Division, Types of Complex Number, Square Roots of a Complex Number.

Unit-5
Vector Algebra:
Vectors, Additions of Vectors, Unit Vector, Position Vector of a Point, Ratio Formula, Product of two Vectors, Scalar, or Dot Product, Vector Product or Cross product, Scalar Triple Product, Vector product of three Vector, Area of Parallelogram.

Text Books
1. H.K. Dass, Higher Engineering Mathematics, S .Chand Publishing & Company India Ltd.New Delhi (2012).
References Book:
1. DeFranza, Gagliardi. Introduction To Linear Algebra With Applications, New **Age** Internationa**l (P) Ltd. New Delhi (2012).**
2. A.K. Sharma, Linear Algebra, Discovery Publishing House, 2007

OBJECTIVE: By this course students will be able to understand the basic functionality of multimedia like images, sound animation and video.

Unit-1
Introduction to multimedia, multimedia system, components and applications, Text, types of text, font and faces, using text in mm font designing and editing tools, hypermedia and hypertext, Ways to present text, aspects of test design, character, character set.Images, still images, bitmap, vector drawing, natural light and colors, color palettes, color models, image file formats, jpeg, bitmap, tiff, dib, eps, cif, pic, tga, aspect ratio, white balance, attributes of images, resolution, pixel depth.Photoshop: Photoshop's environment, raster and vector graphics, navigating in Photoshop, image size and resolution, cropping, selecting image areas, the rectangular and elliptical marquee tool, the lasso tools, saving selection, the magnetic lasso tools, modifying selections. Layers, floating versus fixed selections ,undoing Previous steps, copying selections, creating layers, transforming layers, copying layers between images, arranging layers , saving images in Photoshop format. Color modes, color and painting, Images modes - Mode characteristics, grayscale and bitmap modes, Selecting colors, painting tools, the clone stamp tool, text, layer effects, Brightness contrast, levels adjustments layers, Hue/saturation.

Unit-II
Sound: - Multimedia systems sounds, Basic sound concept, types of sound, digitizing sound, computer representation of sound (sampling rate, sampling size, quantization). Audio formats, MIDI, MP3, 3D sound, Digital audio, audio recording, voice recognition and response.Sound Forge:- Workspace of sound forge,. Creating timeline: - Importing, extracting audio files, basic tools of editing and shortcut commands, Recording process:- Recording attributes, fade, volume, silence.Animation:- Principle of animation , animation techniques, animation development process, types of animation 2D and 3D animation, Animation technique:- 2D and 3D animation techniques , Animation file formats - .dir, .der , .fli, .max, .pics, .gif, .swf.Flash:- Workspace of flash, creating timeline, main editing tools, saving and uploading files, utilities, grouping, arranging, keyframes, frame rate, frame by frame animation, onion skins, motion tween, shape tween. Publishing and exporting.

Unit-III
Video:- How video works, Broadcast video standards:- NTSC, PAL, SECAM, ATSC, DTV, HDTV, IPTV, Analog and Digital video, Digital video standards:- ATSC,DVB,ISDB, video recording and shooting videos, video editing. Video file formats, MPEG, 3GP, AVI, Quick time, real video VHS, camera.Adobe premiere:- Workspace of adobe premiere, Creating timeline:-importing, capturing video files, basic tools of editing and shortcut commands, applying various effects, cut, fade, mix and wipe ,getting output.

Unit-IV
Multimedia authoring tools:- Introduction, factors for selecting of an authoring tools, director, hyper card, Aimtech, Link way etc. Types of authoring tools, stages in designing and producing, multimedia, products, planning and distribution of multimedia project.Compression:-Lossy and lossless. Image:- LZW, JPEG, RLE, Audio:- Differential pulse Coded modulation(DPCM), Video:- MPEG1,MPEG2,and MPEG4.

Unit-V
Dynamic web designing(Dream viewer):- HTML basics , website and pages , text formatting , tables , images ,links , the basic dream viewer environment, creating a site profile, the importance of site

profile , organizing files and folders, folder and file naming rules, creating folder and web page file, implementation/coding process.

Opening a file for editing , titling pages , creating , division, adding headings ,paragraphs versus line breaks , tags :- logical versus physical ,list , linking to other websites, linking to the user files, inserting images on web pages, changing images into links, adding an E-mail link.

Text Book
1. Multimedia tools 2nd edition Pragya Publication.
2. **Encyclopedia of Multimedia** 2nd edition by "BorkoFurht" Springer Publication.

List of practical:

1. Resizing, cropping and selecting a image using Photoshop.
2. Working with layers of images in the Photoshop.
3. Liquefying, Auto leveling, auto color, auto contrast and brightness of the image in Photoshop.
4. Changing mode, adding text, blurring of image, clone stamp tool in Photoshop.
5. Understanding different sound channels.
6. Mixing different sound samples using sampling of sound in Sound Forge
7. Creating a Simple Flash animation using different tools in Macromedia Flash.
8. Using heading tags create a simple web page in HTML.
9. Simple Video Editing Using Adobe Premier.
10. Creating a Dreamweaver Page using different HTML tags.

BCA (HONS)
II Semester
Operating Systems

OBJECTIVE: The student will learn what operating systems are, what they do, and how they are designed and constructed. The student will be introduced to what the common features of an operating system are, what an operating system does for the user, and what it does for the computer-system operator.

Unit – 1
Introduction-What is operating system? System calls, types of system calls, Operating system architecture, Operating System service. Simple batch systems, multiprogrammed batches Systems, Time sharing systems, Personal computer systems, Parallel systems, distributed Systems, Real time Systems, multitasking, RTOS, Client-server system, peer-to-peer systems

Unit – 2
Process-Process concept, process Scheduling, operation on processes, PCB, Interprocess Communication.
Thread-Concept of thread, multithreading, context switching, Scheduling criteria, types of Scheduling, long term, short term and medium term scheduling, scheduling algorithms, multiple processor scheduling.

Unit – 3
Deadlock-definition, deadlock characterization, handling of deadlock, deadlock prevention, avoidance, detection and recovery.

Unit – 4
Memory Management-Logical Vs. Physical Address Space, Swapping, contiguous allocation, Paging, Segmentation, Virtual Memory, demand Paging, Performance of demand paging, page replacement, Page replacement algorithm, thrashing.

Unit – 5
Secondary storage Structure-Disk structure, disk Scheduling, disk management, swap space management, disk reliability.
What is File? Attributes of file, types of file, Directory structure, and RAID structure, File System-Access control, Allocation Methods, Free Space Management

Advance Topics: Network Operating System

Text Books
1. Silberschatz and Galvin, Operating System Concepts 6/ed, Addison Wesley.

Reference Books:
1. William Stalling, Operating Systems: Internals and Design Principles 5/ed, PHI.

FUNCTIONAL ENGLISH-II

2nd Semester

B.Tech (Engg.)/B.Tech (Ag.)/B.Tech (BT)/B.Sc.(Hons) Ag./B.Sc (BT)/B.Pharm/BBA/B.Com/B.com(Hons)/BCA(Hons)/Diploma (Engg.)

Unit-1

Subject verb Agreement, Adjectives and Comparison of Adjectives, Determiners

Unit-2

Introduction to Prepositions (Use and omission), Preposition of travel and movement, Preposition of Date and Time, Relations expressed by Preposition, Words followed by preposition, Finite and Non Finite Clauses& Uses of Let.

Unit-3

Conjunction: Co-ordinating and Subordinating,Sentences :Simple, Compound and Complex

Unit-4

Statement : Direct & Indirect, Phrasal Verb, Antonyms, Synonyms, Letter Writing: Formal (Parts& Layout)

Unit-5

Communication: Definition & Meaning of Communication, Importance &Process,Types: Verbal & Non-Verbal, Barriers, and how to overcome these barriers.

Reference:

Thomson, A.J and A.V. Martinet.*A Practical English Grammar.* Oxford University Press: New York.

Wren and Martin.*High School English Grammar and Composition.*S.Chand& Company Pvt. Ltd. : New Delhi

Greenbaum, Sidney. *Oxford English Grammar.* Oxford University Press: New York.

Rudzka-Ostyn, Brygida.(2003) *Word Power: Phrasal Verbs and Compounds.*Mouton de Gruyter, Berlin: New York

Chambers Dictionary of Antonyms & Synonyms

Hudson, Richard. *English Grammar.* Routledge: New York.

Rodriques, M.V. *Effective Business Communication*. Concept Publishing Company: New Delhi.

Raman,Meenakshi&Sangeeta Sharma.Communication Skills. Oxford University Press

SPIRITUAL STUDIES (HINDUISM)
SRIMADBHAGWADGITA
Compulsory for All Prgramme/ Courses
श्रीमद्भगवद्गीता

UNIT-I
अध्याय—एक
अर्जुन की मोहग्रस्तता,

अध्याय—दो
अर्जुन का नैराश्य, शरीर और आत्मा का विश्लेषण, कर्तव्यपालन, निष्काम कर्मयोग, स्थितप्रज्ञ एवं तापत्रय

अध्याय—तीन
कर्मयोग, षटिवकार

UNIT-II
अध्याय—चार
गीता का इतिहास, भगवान के प्राकट्य का कारण एवं उनकी सर्वज्ञता

अध्याय—पांच
ईश्वरभावनाभावित कर्म

अध्याय—छः
ध्यान योग या सांख्य योग, सिद्धि या समाधियोग

अध्याय—सात
परा और अपरा शक्ति, पुण्यात्मा मनुष्य के लक्षण

UNIT-III
अध्याय—आठ
ब्रह्म, आत्मा, अधिभूत, अधिदैव, अधियक्ष, मुक्तिलाभ की विधि

अध्याय—नौ
परमगुह्याज्ञान

अध्याय—दस
श्रीभगवान का ऐश्वर्य

UNIT-IV
अध्याय—ग्यारह
श्रीभगवान का विराटस्वरूप

अध्याय—बारह

भक्तियोग का वर्णन, अव्यक्त की उपासना में क्लेश, शुद्ध भक्त के लक्षण

अध्याय—तेरह

क्षेत्र, क्षेत्रज्ञ एवं कर्मक्षेत्र की परिभाषा, ज्ञान, ज्ञेय, प्रकृति एवं परमात्मा, चेतना

अध्याय—चौदह

त्रिगुण स्वरूप

अध्याय—पंद्रह

परम पुरुष का स्वरूप, जीव का स्वरूप

UNIT-V

अध्याय—सोलह

दैवीय स्वभाव, आसुरी स्वभाव

अध्याय—सत्रह

श्रद्धा के तीन प्रकार, भोजन के प्रकार, यज्ञ के प्रकार, तप के प्रकार, दान के प्रकार, ऊँ कार का प्रतिपादन, सत्, असत् का प्रतिपादन

अध्याय—अठारह

सन्यास एवं त्याग में अंतर, त्याग के प्रकार, कर्म के कारण, कर्म के प्रेरक तत्व, कर्म के प्रकार, कर्ता के प्रकार, चार वर्णों के स्वाभाविक गुण, प्रभु के प्रति समर्पण भाव

Recommended books

संदर्भ ग्रंथ सूची

1. श्रीमद्भगवद्गीता—गीताप्रेस, गोरखपुर।
2. श्रीमद्भगवद्गीता—मधुसूदनसरस्वती, चौखम्भा संस्कृत संस्थान, वाराणसी, 1994।
3. श्रीमद्भगवद्गीता—एस.राधाकृष्णन् कृत व्याख्या का हिन्दी अनुवाद, राजपाल एण्ड सन्स, दिल्ली, 1969।
4. श्रीमद्भगवद्गीता—श्रीमद् भक्तिवेदांत स्वामी प्रभुपाद, भक्तिदांत बुक ट्रस्ट, मुंबई, 1996।

5. Srimadbhagawadgita-English commentary by Jaydayal Goyandaka, Gita Press, Gorakhpur, 1997.

SULLABUS
SPIRITUAL STUDIES (ISLAM)
Compulsory for All Prgramme/ Courses

UNIT-I

इस्लाम धर्मः— 6वीं शताब्दी में अरब की (राजनैतिक, धार्मिक, सामाजिक, आर्थिक परिस्थितियां व कबीलाई व्यवस्था)

मोहम्मद साहब का जीवन परिचय, संघर्ष व शिक्षाएं, इस्लाम का प्रारम्भ,

इस्लाम क्या है और क्या सिखाता है, ईमान–ईमाने मोजम्मल, ईमाने मोफस्सल।

UNIT-II

इस्लाम धर्म की आधारभूत बातें:—

तोहीद, कल्मा–कल्मा–ऐ–शहादत, कल्मा–ऐ–तैय्यबा, नमाज, रोजा, जकात और,

हज का विस्तारपूर्वक अध्ययन

UNIT-III

खोदा–तआला की किताबें (आसमानी किताबें):—

''वही'' की परिभाषा, तौरेत, जुबूर, इंजील का परिचय, पवित्र कुरान का संकलन, पवित्र कुरान का महत्व, कुरान की मुख्य आयतें, पवित्र कुरान और हाफिजा

UNIT-IV

पवित्र हदीसें और सुन्नतें:—

हदीस और सुन्नत क्या है, हदीस और सुन्नत का महत्व, कुछ प्रमुख सुन्नतें और हदीसों का अध्ययन,

सोकर उठने की सुन्नतें, लेबास की सुन्नतें, बीमारी और अयादत की सुन्नतें, सफर की सुन्नतें

UNIT-V

इस्लाम धर्म की अन्य प्रमुख बातें:—

मलाऐका या फरिशते (देवदूत), खुदा के रसूल, खुदा के पैगम्बर, नबी और रसूल में अन्तर,

कयामत, सहाबा, खलीफा, मोजिजा और करामात, एबादत, गुनाह (कुफ्र और शिर्क), माता–पिता,

रिश्तेदार व पड़ोसी के अधिकार, इस्लाम में औरत के अधिकार, इस्लाम में सब्र और शुक्र,

इस्लाम में समानता और भाईचारा

ADDITIONAL KNOWLEDGE:-

IN THE LIGHT OF 'QURAN' AND 'HADEES', TEN POINTS WILL BE DELIVERED TO THE STUDENTS DAILY, IN A SECULAR COUNTRY THE STUDENTS SHOULD KNOW THE PHILOSOPHY OF OTHER RELIGION ALSO SUCH AS "JAINISM", "BUDHISM" AND "SANATAN DHARMA".

BCA (HONS)
III Semester
Object Oriented Programming in C++

<u>OBJECTIVE:-</u> To familiarize the student with the universal concepts of computer programming.
To present the syntax and semantics of the "C++" language as well as basic data types offered by the language.To discusses the principles of the object-oriented model and its implementation in the "C++" language.

Unit – 1
OOPS-Evolution of programming methodologies, origin of c++, procedural Approach Vs. Object oriented approach, Principles or concepts of OOPs.Merits and demerits of OOPs. Comparison of C and c++, Limitations of c, Introduction to C++, Structure of C++ Program. Added features of C++ over C-Storage classes, reference variables, inline functions, cin, cout. Scope resolution operator, member derefencing operator. Default arguments.

Unit – 2
Introduction to Objects and classes-Defining the class, defining data members and member functions, creating objects, access specifiers-private, public, protected. Nested classes, local classes, empty class. Friend function and friend class.Passing objects as function arguments, returning objects from functions, static members, this pointer, comparison of class with structure. Memory management-new and delete operator, pointer to object, pointer to class members, wild pointers, dangling pointers, smart pointers.

Unit – 3
Constructors and destructors-Purpose of constructors and destructors,default constructors, constructors with and without parameters, Constructor overloading, copy constructor, deep and shallow copy. Invoking constructor and destructor, dynamic constructors, constructors and destructors with static members.
 Overloading Concepts-Function Overloading, Unary and binary operator overloading, overloading new and delete operators, overloading special operators.

Unit – 4
Inheritance-Basic concepts ,Reusability and Extensibility, Types of Inheritance, private ,public and protected Inheritance. Virtual base class.Virtual destructor. Overriding member functions, order of execution of constructors and destructors. Polymorphism-Method polymorphism, polymorphism by parameter, parametric polymorphism, early and late binding.

Unit – 5
Templates-Generic functions, Generic classes, Template restrictions.Streams and manipulators. Unformatted I/O functions. Creating insertors and Extractors.Files-Opening, reading, writing, appending and closing files.

C++ Project-Cricket Score Maintenance,Quiz test
   List of practicals:
    1. Write a program in C++ to exchange the content of two variables using call by reference
    2. Write a program in C++ to demonstrate the Constructor Overloading, assume desired parameters.
    3. Write a program in C++ to create the class shape, and overload the function to return the perimeters of the different shapes.
    4. Write a program in C++ demonstrating the public, protected and private parameters.
    5. Write a program in C++ to sort the integer array.

6. Write a program in C++ to search the 2nd largest element in an array.
7. Write a program in C++ to search the 2nd smallest element in an array.
8. Write a program in C++ demonstrating the Static Data member.
9. Write a program in C++ to demonstrate constructor with default argument.
10. Write a program in C++ to demonstrate destructor in inheritance.
11. Write a program in C++ to demonstrate unary operator over complex number class.
12. Write a program in C++ to demonstrate binary operator for the matrix class.
13. Write a program in C++ to demonstrate multiple inheritance.
14. Write a program in C++ to demonstrate multilevel inheritance.
15. Write a program in C++ to demonstrate public inheritance.
16. Write a program in C++ to demonstrate protected inheritance.
17. Write a program in C++ to demonstrate constructor call in the derived class.
18. Write a program in C++ to demonstrate destructor call in the derived class.
19. Write a program in C++ to copy the content of file into another. (Assume suitable data)
20. Write a program in C++ to append the content of the file. (Assume suitable data)
21. Write a program in C++ to Create a file. (Assume suitable data)
22. Write a program in C++ to demonstrate virtual function.
23. Write a program in C++ to demonstrate friend function.
24. Write a program to implement a Class Matrix that adds subtracts and Initializes the matrix.
25. Write a program to implement an Account Class with member functions to Compute Interest, Show Balance, Withdraw and Deposit amount from the Account.
26. Write a C++ program implement a class 'Complex' of complex numbers. The class should be include member functions to add and subtract two complex numbers. .
27. Write a C++ program to implement a student class having roll no. name, rank, addresses as data members.
28. Write a Program to implement a sphere class with appropriate members and member function to find the surface area and the volume. (Surface = 4 π r2 and Volume = 4/ 3 π r3)
29. Write a C + + program to implement matrix class. Add member function to transpose the matrix.
30. Write a C ++ program to implement a class for complex numbers with add and multiply as member functions. Overload ++ operator to increment a complex number.

TEXT BOOKS:
1.ObjectOrientedProgrammingusingC++,IraPohl,PEARSONEDUCATION
2.ObjectOrientedProgramminginC++,RobertLafore
3.UMLin21Days,TechMedia

OBJECTIVE: This course has been taught to the students to aware about the computer network, and communication. Students will know about the delivery to date from one end to other end.

Unit – 1
Introduction: Definition Internetwork, Intranetwork, Extranetwork, Brief History, ARPANET, OSI, ITU-T.
Network Models: ISO-OSI reference model, TCP/IP Protocol Suite, ATM model, SNA model

Unit – 2
Physical Layer: Design Issues, Hub, Repeater, data, signals, bitrate, baudrate, bandwidth, Modulation (A2A, A2D, D2A, D2D), Multiplexing, Physical specification, Transmission modes, modes of transfer, Transmission media (Guided and Unguided), ISDN, Multicasting, Broadcasting, Unicasting.

Unit – 3
Data Link Layer – Design issues, Bridge, Switch, LAN Topologies, Error Control, Error detection and correction, Flow Control, Access Control, ARQ, CSMA, CSMA/CD, CSMA/CA, MAC sub-layer, LLC sub-layer, MAC addressing, framing, Ethernet, Bit-oriented Protocol, Character-oriented Protocol, SDLC, HDLC, polling and selecting.

Unit – 4
Network Layer-Design Issues, Router, Routing, Types of Routing, Static and Dynamic Routing, Packets, IP packet, logical addressing, IPV4 vs. IPV6, IP addressing, CIDR, sub-netting.

Unit – 5
Transport Layer – Design Issues, end-to-end delivery, Error control, flow control, TCP protocol, UDP protocol,TCP packet, UDP datagram, Congestion control, Quality of service, Port Addressing, Segments & reassembly, Gateway, Protocol Convertor.

Advanced Topics: Network Cables

TextBooks:
1. DataCommunicationsandNetworking,BehrouzA.Forouzan,3rdEdition,TataMcgraw- Hill

ReferenceBook:
1. UnderstandingDataCommunicationsandNetworks,WilliamAShay,2ndEdition,Vikas Publications

LIST OF PRACTICALS
1. Design and study of Straight-Through Cable.
2. Design and study of Cross-over Cable.
3. Design and study of Roll-over Cable.
4. Study of network command in Windows operating system.
5. Study of CISCO Packet Tracer Software.

BCA (HONS)
III Semester
Computer Organization and Architecture

UNIT-1 Concepts & Terminology:
Digital computer concepts- Von-Neumann concept
Register Transfer Language-Register transfer, Bus and Memory transfer, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro operations, Arithmetic Logic Shift Unit.

UNIT-2 Memory Unit:
Memory classification, characteristics; Organization of RAM, address decoding ROM/PROM/EEPROM; Magnetic memories, recording formats & methods, Disk & tape units; Concept of memory map, memory hierarchy, Associative memory organization; Cache introduction, techniques to reduce cache misses, concept of virtual memory & paging.

UNIT-3 CPU Design:
The ALU – ALU organization, Integer representation, 1s and 2s complement arithmetic Computer registers, Multiplication of signed binary numbers-Booth's algorithm ; Divide algorithms- Restoring & Non-Restoring; Floating point representation; Fixed point representation, Overflow detection, status flags.

UNIT-4 Pipelining
Instruction Set Architecture- Choice of instruction set; Instruction codes, Instruction word formats, Instruction Cycle; Interrupt Cycle, CPU Cycle, memory reference instructions, addressing modes.
Control Design – Timing diagrams; T-States, Controlling arithmetic & logic instruction, control structures; Hardwired & Micro programmed CISC & RISC characteristics.

UNIT-5
Pipeline Processing - General concept, speed up, Amdahl's Law, instruction & arithmetic pipeline; Array and Vector Processing, pipeline hazards, Data hazards, Control Hazards
Flynn's classification –SISD, SIMD, MISD, MIMD architectures-Vector and Array processors & their comparison, Concept of Multiprocessor; Centralized & distributed architectures.
Input/output Organization- Introduction to Bus architecture, effect of bus widths, Programmed & Interrupt I/O, DMA, Programmed & Interrupt I/O, DMA.

Text Book:
1. Computer System Architecture [3rd Edition], M. Morris Mano

Reference Book:
1. William Stallings, "Computer Organization and Architecture – Designing for Performance", 6th Edition, Pearson Education, 2003.

BCA (HONS)
III Semester
DATA STRUCTURE IN C

Objective: Assess how the choice of data structures and algorithm design methods impacts the performance of programs. Choose the appropriate data structure and algorithm design method for a specified application.

Unit – 1
Introduction to Data structures and DMA: Definition, Classification of data structures: primitive and non primitive, Operations on data structures, DMA-Meaning of static and dynamic memory allocation. Memory allocation functions: malloc, calloc, free and realloc, Recursion: Definition, Writing Recursive programs.

Unit – 2
Stack –Definition, Array representation of stack, Operations on stack: Infix, prefix and postfix notations Conversion of an arithmetic expression from Infix to postfix, Applications of stacks.
Queue –Definition, Array representation of queue, Types of queue: Simple queue, circular queue, double ended queue (deque) priority queue, operations on all types of Queues
Linked List-Definition, Components of linked list, Representation of linked list, Advantages and Disadvantages of linked list, Types of linked list: Singly linked list, doubly linked list, Circular linked list and circular doubly linked list. Operations on singly linked list: creation, insertion, deletion, search and display.

Unit – 3
Trees-Basic terminology, binary tree, binary tree representation, complete binary tree, Extended binary tree, Array and linked list representation of a binary tree, Traversing binary trees, Threaded binary tree, B-tree, AVL tree, Insertion and deletion in binary search tree, forest, conversion of forest into a tree, heap definition.

Unit – 4
Sorting- types of sorting, Bubble sort, selection sort, insertion sort, quick sort, merge sort, heap sort.
Basic Search Techniques: Search algorithm searching techniques: sequential search, Binary search, Comparison between sequential and binary search.

Unit – 5
Graphs-Definition, graph representation-adjacency matrix, adjacency list, adjacency multilist, traversal DFS, BFS, minimum spanning tree, shortest path algorithm, Kruskal and prim's algorithm.
Hashing Techniques: Hash function, Address calculation techniques, Common hashing functions, Collision resolution, Linear probing, Quadratic, Double hashing, Bucket hashing, Deletion and rehashing

Advance Topics in Data Structure
Asymptotic Notation, Algorithm Complexity, Lexicographical ordering, LCP computation, Suffix Tree

List of practicals:
- STACKS DATA STRUCTURE PROGRAMS
- QUEUES DATA STRUCTURES PROGRAMS
- LINKED LISTS DATA STRUCTURE PROGRAMS
- TREES DATA STRUCTURES PROGRAMS
- GRAPHS DATA STRUCTURE PROGRAMS

TextBooks:
1. G.S Baluja, Data structure and algorithm
Reference book
2. Peter Bras, Advanced Data structure

Unit I
Management – Features, functions – Management as an art, science, profession – Evolution of management thoughts.

Unit II
Planning – Process, importance, nature and scope, types, steps in Planning. Objectives, Policies, Procedures, Strategy.
Decision making – Types of decisions, difficulties in decision making – Management by Objectives.

Unit III
Organising – Features, importance – Principles of organizations – types – Organisation structure – Delegation – Span of control – Line and staff relationship – Use of staff units and committees.

Unit IV
Staffing – Sources of recruitment – Selection process – Training. Directing – Nature and purpose – Communication process.

Unit V
Need for Coordination – Controlling – Importance and functions of control – Control process – Budgetary and non- budgetary control.

BOOKS RECOMMENDED
Management Process   -   RustomDavar
Principles of Management   -   L.M. Prasad
Business Management   -   Dinkar&Pagare
Essentials of Management   -   Koontz & O Donnell
Principles of Management   -   Sherlekar

3rd Semester

B.Tech (Engg.)/B.Tech (Ag.)/B.Tech (BT)/B.Sc.(Hons) Ag./B.Sc (BT)/B.Pharm/BBA/B.Com/B.com(Hons)/BCA(Hons)/B.Sc. (IT)/Diploma (Engg.)

CSEP PROGRAM: This programme is devised to give you all an exposure to the language used in various communication activities. The objective of the programme is to enhance our communication skills. Research says that the more you listen and speak a language the faster you learn. In these sessions, we are going to practice to speak sentences and words used in different situations. Once you have the command on the language, you can use it for any context; be it interviews, presentations, business, technology so on and so forth.

Learning through activities is more effective than learning through lectures and books. We are going to provide you with opportunities to make speeches, presentations, interact with various people etc.

Unit-1

Thematic structure: Money, Cricket, A trip to Gizmo world, Culture and Shopping

Assignment: Progress Test-1

Unit-2

Thematic structure: Festivals, Computers, Auto mania, Environment and studying abroad.

Assignment: Progress Test-2

Unit-3

Thematic structure: Internet, Fashion & Style, Globalization, all about jobs and Trends in Technology.

Assignment: Progress Test-3

Unit-4

Conversation Questions: College, Beauty and Physical attractiveness, Food and eating, Entertainment, Advertising, Films in your own language, Books & reading.

Activities: Reading newspaper and news analysis, Role plays, Extempore, JAM, Story creation, Picture description, Group Discussion and celebrity Interview.
Assignment: Post assessment Test

BCA (HONS)
IV Semester
Computer Graphics

Objective:- The aim of this subject is to show how to generate, manipulate and display graphical images.

Unit – 1
Fundamental of Computer Graphics:- Defenition, classification and application, Development of hardware and software for computer graphics, Display Devices, hardcopy devices, Interactive input devices, display processor,line drawing , various algorithms and their comparisions, circle generation:- Bresenham'smid point circle drawing algorithm, midpoint ellipse drawing algorithm.I/O Devices:- Random and Raster scan display, frame buffer, persistence, resolution, character generation

Unit – 2
Scan Conversion:- scan conversion line, circle ,ellipse, arcs, sectors, polygon, region filling, area filling, scan line algorithm, boundary fil, flood fill algorithms, aliasing effects and antialiasing. Transformations:- 2D and 3D transformation:- scaling, rotation, shearing, reflection, homogeneous coordinate system, compositetrans formation, rotation about arbitrary point(2D), rotation about arbitrary axis(3D)

Unit – 3
2D viewing and clipping:- concept of window , viewport, window to vieporttrans formation, graphic pipeline, panning , zooming. Line clipping algorithms, Cohen surtherland polygon clipping, Sutherland Hodgeman algorithm, Weiler Atherton, 3D clipping:- Normalized view volumes, viewport clipping, clipping in homogeneous coordinate. Liang Barsky algorithm.

Unit – 4
Projection:- Parallel and prespective projection and different types of projections, 1,2 vanishing points. Boundary representation(B-rep). CSG-Constructive Solid Geometry, Shading and illumination model-Light
sources,diffuse,specularreflection,reflectelight,intensitylevel,surfaceshading,fhongshading,gourard shading,.

Unit – 5
Hidden surface:- depth buffer(Z buffer, A buffer) back face , painters algorithm , area sub division, depth sorting method, BSP trees

Text book:
　　1.　Asthana, Sinha, "Computer Graphics", Addison Wesley Newman and Sproul, "Principle of Interactive Computer Graphics", McGraw Hill
　　2.　G.S Baluja　 "Computer Graphics and Multimedia" , DhanpatRai Publication.

References :
1. Rogers, "Procedural Elements of Computer Graphics", McGraw Hill
2. Steven Harrington, "Computer Graphics", A Programming Approach, 2nd Edition
3. Rogar and Adams, "Mathematical Elements of Computer Graphics", McGraw Hill.

CYBER SECURITY AND LAWS

Objectives :

The aim of this course is to provide attendees with a thorough understanding of the issues associated with the design, provision and management of security services for modern communication and information systems. Students will learn the different aspects of information and network security and you will be able to speak about a multitude of security attacks and the defensive strategies used to combat them.

Unit-1

Security principles, threats and attack techniques: Cyber Security, Cyber Security policy, Information security, Security triad: Confidential, Integrity, Availability, Security threats and attacks, threats security, Weak / Strong Passwords and Password Cracking, Insecure Network connections, Malicious Code, Programming Bugs, Different Viruses and worms.

Unit2

Authentication and access control: Identification, Authentication, Authentication by passwords, Access control structures, Types of access control.

Cryptography and Network security: Cryptographic mechanisms, Digital signatures, Encryption, digital signature certification, suspension and revocation of digital signature certificate, Protocol design principles, Firewalls, Intrusion detection, Active/ Passive– Interference,Interception,Impersonation ,Worms .

Unit-3

Protection measures: Business risk analysis, Prevention, detection and response , Security Policies, Security Procedures and Guidelines , Business Continuity and Disaster Recovery.

Legal and Ethical Issues: Protection of data and Information Laws, Employees rights, Software failure, Computer Crime, Privacy, and Ethics

Unit-4

Cyber crime and IT Act: Cyber Governance Issues, Cyber User Issues, Cyber Crime and Offences, Overview of IT Act, 2000, Amendments and Limitations of IT Act, Electronic Governance, Legal Recognition of Electronic Records, Cyber Crime and Offences, Concept of domain names, new concept in trademark and dispute, cyber squatting, reverse hijacking, spamming.

Unit-5

Hacking: Introduction of hacking, hacking, criminal hacking vs. Ethical hacking.

IPR: Ethical Issues in intellectual property right, copy right and related rights, patent and related rights, Trade Marks and rights arising from Trademark registration, software piracy, plagiarism. Indian Legislations for the protection of various types of Intellectual Properties

Advance topic: Database, web and Mobile Security,Authentication in distributed systems

TextBooks:
1. Cyber laws and syber security in developing and emerging economies, ZeinabKarake-Shalhoub, Luna Al Qasimi
2. Computer Security, Dictergouman, John Wiley & Sons

Reference Books
1. Computer Security: Art and Science, Mathew Bishop, Addison-Wisley
2. Computer Security, 2nd ed. Author: Dieter Gollmann Publisher: John Wiley & Sons, 2006 ISBN: 0-470-86293-9

BCA (HONS)
IV Semester
DATABASE MANAGEMENT SYSTEM AND ORACLE

OBJECTIVE: This course will provide you with an understanding of the design, creation, maintenance and management of a relational database management system (RDBMS). You will learn how to create and access data using Structured Query Language (SQL), the programming language used by most large relational database management systems such as Oracle

UNIT 1
DBMS INTRODUCTION:Purpose and advantages of DBMS, view of data, DBMS architecture and data independence, database languages. Classification of DBMS ,schema and sub schema. database administrator and users, data dictionary, data modeling using ER model, Entities, attributes and relationships .

UNIT 2
KEYS:Domains, relations ,kinds of relations ,various types of keys, candidate ,primary ,alternate and foreign keys. Codd's rule
Relational algebra,:- relational algebra with extended operations ,tuple relational calculus ,domain relational calculus, set operation, aggregate functions ,null values, join relations.

UNIT 3
RELATIONAL DATABASE DESIGN:- pitfalls in relational database design trivial and non trivial dependencies, closure set of dependencies and of attributes.
Introduction to normalization, non lossdecomposition ,FD diagram,1st,2nd,3rd BCNF,4NF,5NF

UNIT 4
Basic SQL:- DDL,DML and DCL commands ,specifying constraints in SQL ,select statement.

UNIT 5
Additional features of SQL, PL/SQL, cursor, trigger, view

List of Practical's in PL/SQL
1. program to perform all arithmetic operations.
2. program to find simple interest.
3. program to find area of square rectangle and circle.
4. program to print your name n times.
5. program to find whether an entered number is even or odd.
6. program to find whether an entered number is positive , negative or zero.
7. program to find whether an entered number is divisible by 11 or not.
8. program to print table of entered number.
9. program to print factorial of entered number.
10. program to find greatest of three numbers.

BCA (HONS)
IV Semester
Java Programming

Objective: Java is a computer programming language. The purpose of Java is to create programs. These codes demonstrate how to get input from a user, working with loops, strings and arrays. Programs are provided with output and you can also download class file and execute it directly without compiling the source file.

Unit – 1
History and evolution of Java: Creation of Java, Java Byte Code, Java Virtual Machine, Difference between Java and C++, Java program structure, Java Tokens. Overview of Java: First simple program of Java, Implementing Java program. Data types, variables and constants: Primitive and non primitive data type, Type conversion and casting, Operators.

Unit – 2
Control Statements: Selection statements, Iteration Statements, Jump Statements, Methods: Methods overview, Call by value, Call by reference, Recursion. Introduction to Arrays: One dimensional, two dimensional, multidimensional, jagged arrays. Introduction to object oriented programming: Class, Objects, Constructors, Method Overloading, Method Overriding, Inheritance, Final keyword, Abstract method and Classes, Visibility Control.

Unit – 3
Interfaces: Introduction, Defining Interfaces, Implementing Interfaces. Packages: Java API Packages, Creating and accessing packages, Adding classes to package, Multithreading and Exception Handling: Basic idea of multithreaded programming, the life cycle of a thread, Creating thread with the thread class and run able interface, Thread synchronization, Thread scheduling. Basic idea of exception handling: The try, catch and throw. Applets: Applet security restrictions, the class hierarchy for applets, Life cycle of applet, HTML Tags for applet.

Unit – 4
Input/output: Exploring Java IO, Directories, stream classes, and The Byte stream: Input stream, output stream, file input stream, file output stream, print stream, Random access file, the character streams, Buffered reader, buffered writer, print writer, serialization. The AWT: The class hierarchy of window fundamentals, The basic user interface components Label, Button, Check Box, Radio Button, Choice menu, Text area, Scroll list, Scroll bar, Frame.

Unit – 5
Introduction to MySQL: features, installation & configuration, creating & managing database, MySQL Driver Java Database Connectivity (JDBC) with MySql: loading MySql driver, creating connection, Statement. Introduction to Servlet, Servlet life cycle, Writing servlets, Java server pages, Scripting elements, Introduction to apache tomcat server (installation and configuration), run jsp on tomcat.
Minor Projects-Chat Server, Dxball game, drawing a simple graph using an applet

TextBooks:
     1. E. Balagurusamy, Fundamental of Java programming

Reference book
     1. Herbert Schildt, The Complete Reference for Java, TMH publication

BCA (HONS)
IV Semester
Linux and Shell Programming

OBJECTIVE: An introduction to shell programming in a UNIX/Linux environment, this course is designed for system administrators or technical users with little or no programming background. Understanding shell programming gives a user full power of the UNIX environment. Topics include use of a text editor, the features of the Bash shell, variables, control structures, functions, file access and basic programming style.

Unit – 1

Linux Introduction and File System: Linux introduction and file system - Basic Features, Different flavors of Linux. Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell.Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories. Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp&comm, View files, disk related commands, checking disk free spaces.

Unit -2

Essential Linux commands : Processes in Linux - process fundamentals, connecting processes with pipes, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron commands, kill, ps, who, sleep, Printing commands, touch, file related commands - wc, cut, dd, etc. Mathematical commands- bc, expr. Creating and editing files with vi& vim editor

Unit – 3

Security File Permission and Job Control: Security, File permissions and Job control, Users, group and ownership of files, Security levels and shell customization: Environment variables, File permissions: File attribute, permissions and changing file permissions, User masks, changing ownership and groups, Job control: process, jobs, foreground and background jobs

Unit – 4

Shell programming: Basic of shell programming, Various types of shell available in Linux, comparisons between various shells, shell programming in bash, read command, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automate system tasks.

Unit – 5

Filter commands: pr, head, tail, cut, paste, sort, uniq, tr. Filter using regular expressions – grep, egrep, and sed, sorting and translating characters**,** Files with duplicate lines, counting character, words and lines and comparing files.

Text Books and Reference Books:
1. UNIX - CONCEPTS & APPLICATIONS (THIRD ED.) - SUMITABHA DAS, T ATA MCGRAW HILL PUBLICATIONS

List of Practical's

1.Shell script program to perform all arithmetic operations.
2. Shell script program to find simple interest.
3. Shell script program to find area of square rectangle and circle.
4. Shell script program to print your name n times.
5. Shell script program to find whether an entered number is even or odd.
6. Shell script program to find whether an entered number is positive , negative or zero.
7. Shell script program to find whether an entered number is divisible by 11 or not.
8. Shell script program to print table of entered number.
9. Shell script program to print factorial of entered number.
10. Shell script program to find greatest of three numbers.

4th Semester

B.Tech (Engg.)/B.Tech (Ag.)/B.Tech (BT)/B.Sc.(Hons) Ag./B.Sc (BT)/B.Pharm/BBA/B.Com/B.com(Hons)/BCA(Hons)/Diploma (Engg.)

Introduction to CPP Program: 'Soft skills' are a framework of desirable qualities which gives a candidate an edge over his peers during the selection process of a company. We, at AKS University, have designed the Campus Placement Program (CPP) to help out our students who are sitting for their placement process in various Companies.

Teaching methods: The teaching methods in CPP training includes lectures, projects, role plays, quizzes, and various other participatory sessions. The emphasis will be on learning by doing. Since the method of training is experiential and highly interactive, the students imbibe the skills and attributes in a gradual and subtle way over the duration of the program. The students will not only learn the skills and attributes but also internalize them over a period of time.

Objective of the Program:
- ❖ Develop effective communication and Presentation skills.
- ❖ Develop all-round personality with a mature outlook to function effectively in different circumstances.
- ❖ Understand the skills tested and participate effectively in Group Discussion.
- ❖ Take part effectively in various selection procedures adopted by the recruiters.
- ❖ Develop broad career plans, evaluate the employment market, identify the organizations to get good placement, match the job requirements and skill sets.

UNIT-1

Soft skills – a general overview, Talking about Present, Past and Future, Describing Processes and operations, Expressing Opinion: Agreement & Disagreement, Special Expressions in English, Pronunciation and neutral accent,

UNIT-2

Introduction and definition of a GD, Purpose of a GD, Types and strategies in a GD, Do's and Don'ts in GD, Presentation skills: A presentation about the company will be made by the students throughout the Unit. Each and every student is required to go through at least 10 Companies Profile related to their domain expertise., Telephone etiquettes- Preparing for business calls/Making business calls/Telephonic phrases, Dining etiquettes, Email etiquettes

UNIT-3

Industry Expectations, SWOT & STAR, Self Discovery, Leap to success- 7 Orientations, Time Management, Team building & leadership, Goal Setting, Developing Positive Attitude, Organizing meetings, Anchoring in a formal setting.

UNIT-4

Resume writing: Concept and Practice, Body Language, Corporate Grooming Dressing. **Mastering Personal Interviews:** Paper Interview, Personal Interview, FAQs, Interview Practice, Domain Specific Interview Preparation, Peer review- Pair interview, Interview model (Vocabulary for an effective Interview).

Reference Books:

1.Peter, Francis. Soft Skills and Professional Communication. New Delhi: Tata McGraw Hill.

2. Singh, Prakash and Raman, Meenakshi. Business Communication. New Delhi: Oxford UP.

3. Bailey, Edward P. Writing and Speaking at Work: A Practical Guide for Business Communication.

4. Pease, Allan and Peas, Barbara. The Definitive Book of Body Language.

5. Sherfield, R. M. ; Montgomery, R.J. and Moody, P, G. (2010). Developing Soft Skills. 4th ed. New Delhi: Pearson.

6. Johnson, D.W. (1997). Reaching out – Interpersonal Effectiveness and Self Actualization. 6th ed. Boston: Allyn and Bacon.

7. Jain, Alok, Pravin S.R. Bhatia & A.M.,Sheikh Professional Communication Skills. S.Chand.

8. Krishnaswami,N and Sriraman, T., Creative Englishfor Communication,Macmillan.

9. Mohan Krishna & Meera Banerji. Developing Communication Skills. Macmillan.

10. Robbins, S. P. and Hunsaker, Phillip, L" Training in Interpersonal skills"

BCA (HONS)
V Semester
Artificial Intelligence (Elective-1)

OBJECTIVE:A critical examination of the advancing intellectual developments in artificial intelligence and evaluation of their salient philosophical and psychological implications.

Unit -1
Introduction of Artificial intelligence:- various definition of AI ,application and AI technique. Production system, controlstrategies, reasoning, forward and backward chaining.
Intelligent Agents:-Definition of a rational agent, reflex model based, utility based agents, The environment in which particular agent operates.

Unit -2
Problem solving search and control strategies:- General problem solving, production system,control strategies, exhaustive search. DFS ,BFS.
Heuristic Search techniques:- Hill climbing , branch and bound techniques, A* algorithm, AO* algorithms, AND/OR graphs, Problem reduction. Constraint satisfaction problem. Alpha –Beta pruning. Uniform Cost search. Genetic Algorithm. Minimax and game trees

Unit -3
Knowledge Representation:- General concepts of knowledge, Approaches of knowledge representation, predicate logic to represent knowledge, Resolution, Unification Algorithm, First order predicate Calculus, Skolemization, Horn's Calculus, Semantic network,
PROLOG;- Introduction ,converting English to Prolog, Facts and rules, goals, Prologterminology, variables, controlstructure, arithematic operator. inputs/output and streams.

Unit -4
Planning;- Overview an example, domain the block word, component of planning systems, goal stack planning, non-linear planning
Learning And Expert system-;Meaning, rolelearning, learning by taking advice, learning from examples. Explanation based learning. Expert system and its architecture, various expert systems shell,.

Unit- 5
Uncertainty ;- different types of uncertainty,degree of belief and degree of truth,various probability constructs,priorprobability,conditionalprobability,probabilityaxioms,probability distribution and joint probability distribution.Baye'srule,Other approaches to modeling uncertainty sunch as Dampster-Shafer theory.
Statistical Reasoning;- Probability and Bayes Theorem,Certanity factors and Rule based system, Bayesian network

Text Books:
1. Artificial Intelligence: A Modern Approach 3rd edition Stuart J. Russell and Peter NorvigPrentice hall.
Reference Books:
1. Artificial intelligence 3rd edition Elaine Rich, Kevin Knight McGraw Hill
2. PROLOG Programming for ART 3rd edition Ivan Bratko   Addison Wesley

Objective: To make the students learn the principles and practices of Cryptography, Network Security and to enable the students understand the various methods of encryption and authentication and help them identify the application of these techniques for providing Network and System Security.

Unit-1
Introduction to Cryptography: Attacks, Services & Mechanisms, Security, Attacks, Security Services. Conventional Encryption: Classical Techniques, Conventional Encryption Model, and Steganography, Classical Encryption Techniques.

Unit-2
Modern Techniques: Simplified DES, Block Cipher Principles, DES Standard, DES Strength, Differential & Linear Cryptanalysis, Block Cipher Design Principles, Block Cipher, Modes of Operation.

Unit-3
Public Key Encryption: Introduction to Number Theory, Modular Arithmetic, Prime Numbers. Euler's Totient Function, Principles of public key cryptosystems, Diffie Hellman Key Exchange, RSA Algorithm, The Chinese Remainder Theorem.

Unit-4
Key Management & Distribution
Symmetric key distribution using symmetric encryption, Symmetric Key Distribution Using Asymmetric Encryption, Distribution of Public Keys, X.509 Certificates, Public Key Infrastructure.

Unit-5
Network & Internet Security:
Transport-Level Security – Web security Considerations, Secure Socket Layer and Transport layer Security;
E-Mail Security – Pretty Good Privacy, S/MIME.
IP Security – IP Security Overview, IP Security Policy, Encapsulating Security Payload, Combining Security Associations, Internet Key Exchange

Text Book:
1. Cryptography and Network Security: Principles and Practices, William Stallings, Prentice Hall, 5th edition

Reference Book:
1. Cryptography and Network Security, AtulKahate, TmH, 8th edition

BCA (HONS)
V Semester
Information System Analysis

OBJECTIVE:The objectives are to determine specific needs of a system and ultimately facilitate a comprehensive design around these needs, describe different life cycle models and explain the contributionof the system analysis and design within them.

UNIT-1
SYSTEM CONCEPTS: The system concept, Characteristics of system, Elements of system, Types of system, manmade information systems. Basic System Development Life Cycle with different users and their role in SDLC.
PROCESS MODELS: Different Approaches and Models for System Development. Waterfall Model, Spiral Model, Prototyping, RAD, COCOMO Model, Capability Maturity Model Integration (CMMI).

Unit-2
INITIAL INVESTIGATION AND ANALYSIS: Requirement Investigation & Fact Finding Methods, Types of Requirements - Functional and Non-Functional, Fundamental problems in defining Requirements, Software requirement Specification (SRS).Role of System analyst.

Unit-3
SYSTEM PLANNING: Data and fact gathering techniques: Interviews, Group communication, Presentations, Site visits. Feasibility study and its importance, Types of feasibility reports
System: Selection plan and proposal, Prototyping, Cost-Benefit and analysis: Tools and techniques, Software metric

Unit-4
Systems Design and modeling:
Process modeling, Logical and physical design, Design representation, Systems flowcharts and structured charts, Data flow diagrams, Common diagramming conventions and guidelines using DFD and ERD diagrams. Data Modeling and systems analysis, Designing the internals: Program and Process design , Data dictionary, Pseudo codes, Decision tree, Decision tables, HIPO and IPO chart, Gantt charts, warnierdiagram.PERTchart
Input and Output: Classification of forms: Input/output forms design, User-interface design, Graphical interfaces.

Unit-5
IMPLEMENTATION, TESTING AND QUALITYASSURANCE:
Implementation issues: Structured Coding Techniques - Coding Style - Standards and Guidelines - documentation guidelines -Type Checking - Scoping Rules - Concurrency Mechanisms.
Testing: Introduction of testing, Validation Testing, System Testing, Black-Box Testing, White-Box Testing and their type,
Quality assurance: SQA, implementation and software maintenance, System security, Disaster, Recovery planning, Ethics in system development

Advance Topic: Object Oriented Analysis and design, System Audit and Security.

Reference Books
1. SYSTEM ANALYSIS AND DESIGN   E. M. AWARD.
2. ANALYSIS AND DESIGN OF INFORMATION SYSTEM J. SENU

BCA (HONS)
V Semester
Management Information System

Objectives: The course provides students a fundamental understanding of management information systems concepts and their role in contemporary business. At the end of this course students should be able to participate in information systems development as an informed person

Unit – 1
Management Information Systems - Need, Purpose and Objectives -Contemporary Approaches to MIS - Information as a strategic resource - Use of information for competitive advantage - MIS as an instrument for the organizational change Information, Management and Decision Making - Models of Decision Making -Classical, Administrative and Herbert Simon's Models - Attributes of information and its relevance to Decision Making - Types of information

Unit – 2
Information Technology - Definition, IT Capabilities and their organizational impact - Telecommunication and Networks - Types and Topologies of Networks -IT enabled services such as Call Centers, Geographical Information Systems etc. FIS, Mis, HRIC, HRA

Unit – 3
Systems Analysis and Design - Systems Development Life Cycle – Alternative System Building Approaches - Prototyping - Rapid Development Tools – CASE Tools – Object Oriented Systems (Only introduction to these tools & techniques)

Unit – 4
Decision Support Systems - Group Decision Support Systems – Executive Information Systems - Executive Support Systems - Expert Systems and Knowledge Based Expert Systems - Artificial Intelligence

Unit – 5
Management Issues in MIS - Information Security and Control – Quality Assurance -Ethical and Social Dimensions, Corporate Social Responsibility, - Intellectual Property Rights as related to IT Services / IT Products - Managing Global Information Systems.

TextBooks:
> 1. Management information system, Pearson Publication

Reference book
> 1. Management information system, TMH publications

UNIT-1
HTML - Concepts of Hypertext, Versions of HTML, Basic text formatting, Head & Body Sections, Inserting texts, Images, Hyperlinks, Backgrounds and Color controls. Different HTML tags, Table layout and presentation, Use of Fonts, List types and its tags, Use of Frames and Forms in web pages.

UNIT-2
XML-Introduction, XML Fundamentals, XML Syntax, Accessing Data from XML Documents.
Cascading Style Sheet- Introduction, Level s of CSS   inline style sheet, External style sheet, classes, class and ID method, DIV and SPAN tags.

UNIT-3
JavaScript- Introduction, Language Basics-Variables, operators, statements, functions, JavaScript Events, Such as onclick, mouse out, mouseoveretc, form validation.
J Query- Introduction, J query Syntax, J query selectors, Events

UNIT-4
PHP – Introduction to Scripting Language PHP, Installation and Configuration of PHP, Data types in PHP, PHP Syntax, Comments, Variables and Constants, Embedding PHP in HTML.
PHP Functions: user defined functions, Strings Concatenation, Strings functions.
Arrays: Creating Array and Accessing Array Elements, Control statements, Loops, form validation.

UNIT-5
Working with forms: - CRUD – Select statements, Creating Database/Tables, Inserting values, Updating and Deleting, PHP with MYSQL, Creating Connections, Selecting Database, Perform Database (Query).
XML-Introduction, XML Fundamentals, XML Syntax, Accessing Data from XML Documents.

Text Books:
 ➢ Beginning PHP5, Apache, and MYSQL Web Development, Wrox Publication Edition 2005.
 ➢ Beginning HTML, XHTML, CSS, and JavaScript, JonDuckettEdition 2010.

Reference Books:
 ➢ Web Technologies, Black Book, DreamTechPressDreamTechPressEdition 2010.

 Practical List:
1   Create a web page by making use of the following tags: Head, Body, Bgcolor, text and submit.

2   Write a html program applying inline css.
3   write a html program using class based external style sheet
4   Write a java script program to design the simple Calculator
5   Write a java script program to find the factorial of given number
6   Write a javascript program to form validation in html.
7   Create a web form using php for login page.
8   Create a simple xml document with following details: Rollno, Sname, Contact, Email and Address.
9   Write a simple php script to perform crud operations.
10   Create a web form using php for enquiry details.

BCA (HONS)
V Semester
Accounting With Tally

OBJECTIVE: To acquaint the students with basic concepts of Tally.ERP 9 and the various uses and application of such in business.

Unit-I: Accounting Concepts
Concepts of Accounting, Manual Vs Computerized Accounting, Golden Rule, Accounting Equation , journal entry, ledger account etc.

Unit-II: Trial balance and final accounts
Ledger- wise trial balance. Trading account, Profit and loss, account, Balance sheet, Outstanding, Practical work and reports

Unit-III: Fundamentals of Tally
Introduction, Creation of Company, Introduction to Gateway of Tally, Menu, Company Info menu. Accounting master: Features, configuration, setting up of account heads, voucher entries, Purchase / Sales order Receipt note, Purchase / Sales bills, Debit / Credit note Journal, Voucher, VAT Bills

Unit-IV: VAT and CST
Configuring VAT in tally
Creating masters, entering transactions, accounting for return of goods, rate difference in purchase/sale, exempt transactions, sales for registered and composite dealers, Vat report
Configuring CST in tally Basics of CST, Recording interstate transactions, payment of CST, CST reports.

Unit-V: Technological efficiencies in tally.erp9
Tally vault, security control, import export of data, tally audit
Advance Topics:- Management controls Concept of control centre. Installing tally.erp9, logging and managing control centre
Online support and help

Text Books

S.No	Name of Book	Edition	Authors' Name	Publication
1	Tally.ERP 9 in Simple Steps		Kogent Learning Solutions Inc.	Dreamtech publications
2	Tally .ERP 9 Training Guide 1st Edition	2009	A. K. Nadhani,	BPB Publications
3	Financial Accunting using tally ERP9.0	2011	A. Mansoor	Pragya Publication

Reference Books:

S.No	Name of Book	Edition	Authors' Name	Publication
1	Tally for Beginners			Tally Press

BCA (HONS)
VI Semester
ANIMATION TOOLS

Objective: Using *animation* as a *tool* to encourage and develop children's learning is not only fun but effective! By using *animation* children develop skills competencies in: Storytelling, Visual communication, Cognition, emotional, ethic and aesthetic aspects, Observation and sensory aspects, Concentration and Problem-solving and innovative aspects.

UNIT 1
Basics of Animation: History of Animation, Introduction to Animation, Terms used in Animation, Types of Animation Skills for Animation Artist, Basic Principles of Animation Animator's Drawing Tools, Rapid Sketching & Drawing , Developing Animation Character, Anatomy & Body Language, Introduction to equipment required for animation .

UNIT 2
Developing the characters with computer animation, 2 D virtual drawing for animation, sequential movement drawing ,Thumbnails, motion studies , drawing for motion, Essentials & qualities of good animation characters ,Three dimensional drawings of characters.

UNIT 3
Computer Based 2 D Animation: Overview of Flash, Introduction to the flash interface, Setting stage dimensions, working with panels, panel layouts Introduction to drawing and drawing tools in Flash, Panels - Description,modifying, Saving & deleting a panel , Layers & Views, Shaping Objects – Overview of shapes, Drawing & Modifying Shapes , Basic Principles of Text, Bitmap Images & Sounds, Object Selection, working with objects & transforming Objects , Animation -Principles , Frame by frame animation, twining, masks, Building a Movie- Symbol, Libraries, Structure & Exporting Movie

UNIT 4
Introduction to 3 D Animation &Modeling: Introduction & Context for 3 D Studio Max, Exploring the Max Interface, Controlling & configuring the view ports, working with Files, importing & exporting Creating & editing primitive objects, Selecting Objects & setting object properties, Transforming objects, pivoting, aligning & snapping, Cloning objects & Creating object arrays.

UNIT 5
3D ANIMATION: Grouping & Linking objects, Accessing sub objects and using modeling helpers, Introduction to modifier & using modifier stack, Drawing & Editing 2 D Spines &shapes modeling with polygon & Patch, Using the Graphic Modeling & Painting with objects.
Text Books:-
1. The Complete Animation course by Chris Patmore, By – Barons Educational Series(New York)Anatomy of the Artist – Thompson & Thompson
Reference Books
2. FLASH MX For PC/Mac Published by – FIREWALL MEDIA – Laxmi Publications
LIST OF PRACTICLES
1. Create a simple animation in flash.
2. Create a animation using shape tween in flash.
3. Create a animation using motion tween in flash..
4. Modifying, saving and deleting a panel in flash.
5. Building a movie symbol in flash.
6. Controlling &configuring the view ports in 3D Studio Max.
7. Importing and exporting files in 3d Studio Max.
8. Pivoting, aligning & snapping, Cloning objects & Creating object arrays in 3D Studio Max.

9. Drawing & Editing 2 D Spines & shapes in 3D Studio Max.
10. Modeling with polygon & Patch in 3D Studio Max

BCA (HONS)
VI Semester
ASP.Net with C#(Elective-II)

Objective: This course enables students to know about web development using .Net Technologies.

Unit-1
Introduction to .Net - .Net Framework Features & Architecture, CLR, Common Type System, MSIL, Assemblies and Class Libraries, . NET languages and Benefits of. NET Application C# and ASP.NET, difference between PHP and ASP.NET

Unit-2
C#
C -Sharp Language (C#): Introduction, Data Types, Identifiers, Variables, Constants, Literals, Array and Strings, Object and Classes, Inheritance and Polymorphism, Operator Overloading, Interfaces, Delegates and Events. Type conversion.

Unit-3
Visual C#.NET fundamentals and Windows based software development:
Overview of C#, Visual C#.NET .Net Development Environment, Introduction to .NET Controls: working with .Net Controls. Windows based software development, introduction to MDI Parent Form.

Unit-4
Web based software development:
Introduction to Web servers, IIS configuration, ASP.NET Controls,
ASP.NET Web Form Controls, accessing controls Buttons, Text Box, Labels, Checkbox, Radio Buttons, List Box, calendar etc.
Validation controls: RequiredFieldValidator,Range validator, RegularExpressionValidator, CompareValidator etc.

Unit-5
ADO.Net (Using C#.NET)
Architecture of ADO.Net,.Net Data provider, Accessing Data using Command and Data Adapter, Data Set, Data Reader, Binding data in data grid view.
Introduction to XML: Accessing data from XML document.

Text Book:
1. ASP.NET 3.5 BLACK BOOK (COVERS C# AND VB 2008 CODES) - DREAMTECH PUBLICATION
2. THE COMPLETE REFERENCE ASP.NET BY MATHEW MACDONALD - TMH
3. PROFESSIONAL ASP.NET- WROX PUBLICATION

Reference Book:
1. Kothari Nikhil and Datye Vandana, Developing ASP .NET Server Controls and Components, Tata McGraw Hill, 2003.
2. Esposito Dino, Applied XML Programming for Microsoft .NET, Tata McGraw Hill, 2003.

BCA (HONS)
VI Semester
Advanced Java (Elective-II)

Objective: This course is taught to aware about the J2EE, and its advance component, and other advanced packages is JAVA.

Unit-1
Introduction to JFC and Swing, Features of the Java Foundation Classes, Swing API Components, JComponent Class, Windows, Dialog Boxes, and Panels, Labels, Buttons, Check Boxes, Menus,Toolbars, Implementing Action interface, Pane, JScrollPane, Desktop pane, Scrollbars, Lists and Combo Boxes, Text-Entry Components, Colors and File Choosers, Tables and Trees, Printing with 2D API and Java Print Service API. JDBC Introduction, JDBC Architecture, Types of JDBC Drivers, TheConnectivity Model, The java.sql package, Navigating the ResultSet object's contents, Manipulating records of a ResultSet object through User Interface , The JDBC Exception classes,Database Connectivity, Data Manipulation (using Prepared Statements, Joins, Transactions, Stored Procedures), Data navigation.

Unit -2
Threads and Multithreading, The Lifecycle of a thread, Creating and running threads, Creating the Service Threads, Schedules Tasks using JVM, Thread-safe variables, Synchronizing threads,Communication between threads. Overview of Networking, Working with URL, Connecting to aServer, Implementing Servers, Serving multiple Clients, Sending EMail, Socket Programming, Internet Addresses, URL Connections, Accessing Network interface parameters, Posting Form Data,Cookies, Overview of Understanding the Sockets Direct Protocol. Introduction to distributed object system, Distributed Object Technologies, RMI for distributed computing, RMI Architecture, RMIRegistry Service, Parameter Passing in Remote Methods, Creating RMI application, Steps involved in running the RMI application, Using RMI with Applets.

Unit -3
What Is a Servlet? The Example Servlets, Servlet Life Cycle, Sharing Information, Initializing a Servlet, Writing Service Methods, Filtering Requests and Responses, Invoking Other Web Resources, Accessing the Web Context, Maintaining Client State, Finalizing a Servlet

Unit -4
What Is a JSP Page?, The Example JSP Pages, The Life Cycle of a JSP Page, Creating Static Content, Creating Dynamic Content, Unified Expression Language, JavaBeans Components,JavaBeans Concepts, Using NetBeans GUI Builder Writing a Simple Bean, Properties: Simple Properties, Using Custom tags,2 Reusing content in JSP Pages, Transferring Control to Another Web Component, Including an Applet.

Unit -5
Introduction to EJB, Benefits of EJB, Types of EJB, Session Bean: State Management Modes; Message-Driven Bean, Differences between Session Beans and Message- Driven Beans, Defining Client Access with Interfaces: Remote Access, Local Access, Local Interfaces and Container-Managed Relationships,Deciding on Remote or Local Access, Web Service Clients, Method Parameters and Access, The Contents of an Enterprise Bean, Naming Conventions for Enterprise Beans, The Life Cycles of Enterprise Beans, The Life Cycle of a Stateful Session Bean, The Life Cycle of a Stateless Session Bean, The Life Cycle of aMessage-Driven Bean Building Web Services with JAX-WS: Setting the Port, Creating aSimple Web Service and Client with JAX-WS.

Text books:
1. J2EE, Complete Reference