FACULTY OF ENGINEERING, LIFE SCIENCES & MANAGEMENT

IASE Deemed University

Gandhi Vidya Mandir, Sardarshahr
(Rajasthan) – 331403,
INDIA

Teaching and Examination Scheme and Syllabus

For

Diploma in Computer science & Engineering
(Three-Year Full Time Diploma in Engineering Programme)
(SEMESTER SCHEME)

Sessions 2017-18

Rules And Guidelines For The Students

1. The Diploma in engineering (Computer Science & Engineering) course is a three year (Six Semesters) full time integrated Diploma programme.

2. ELIGIBILITY for Admission

A candidate seeking admission to the first year of the Diploma in engineering course shall be required to have passed secondary examination from any board recognized by Rajasthan Board of Secondary Education, Rajasthan with at least 45% marks in aggregate for general category candidates, and 40% for SC/ST/OBC candidates.

3. ADMISSION procedure

Admission to the first year Diploma in engineering course shall be made on the basis of marks scored by the candidates in his/her secondary examination.

4. THE PROGRAMME

The Diploma in engineering (Computer Science & Engineering) course is a three year (Six Semester) full time degree program .The course structure and program administration are as follows.

5. COURSE STRUCTURE

The three years, six semester teaching consists of Theory (Lectures and Tutorials) and Practicals/Sessionals (Laboratory work, Engineering Graphics, Workshop Practice and Project etc.).Examination will be held at the end of the each semester. Details of these are given in the Teaching & Examination Scheme.

6. PROGRAMME ADMINISTRATION

6.1 Medium of Instruction

English/Hindi shall be the medium of instruction and examination.

6.2 EVALUATION

(a) Each subject will be evaluated through a theory paper at the end of the semester carrying 80 marks along with continuous evaluation of sessional work, carrying 20 marks. The theory paper shall be of three hour duration. The sessional work will consist of continuous assessment of student's performance by teachers in tutorial classes, and class tests.

(b) Three class tests will be organized in each semester as per the scheme. The higher two out of the marks scored in the three tests will be considered for the sessional marks.

(c) Evaluation of laboratory practical work and Engineering Graphics (Drawing) will be through continuous assessment throughout the semester as well as examination at the end of the semester.

(d) Project: The project work will be carried out in the V & VI semester. The topic of the project will be approved by the Head of the Department and the entire project work will be carried out under the guidance of a teacher of the department approved as project supervisor by the Head of the Department. The nature of the project work will consist of varying proportions of designing, fabrication, testing and analysis of results. The project topic can also be taken from a live industrial problem. The report of the completed project shall be signed by the guide and submitted to the Head of the Department on or before the last working day of the sixth semester. The evaluation of the project will be done by a board consisting of two examiners.

7. Promotion

7.1 The maximum span period of a program is six years from the date of registration in the program.

7.2 The minimum marks for passing the examination for each semester shall be 50% in each practical/ sessional, 40% in End Semester Examination of each theory paper, 50% in training and project, and 45% in the aggregate of all the subjects (theory, sessional and project) of the semester.

7.3 A student will be permitted to attend the classes of the second/fourth/sixth semesters immediately after the examination of the first/third/fifth semester's examination, as the case may be, provided he/she has appeared in the first/third/fifth semester examination, respectively.

7.4 To be eligible for promotion to the 3rd semester of the program a student must have successfully cleared at least 11 subjects out of the 22 subjects including practicals of the first and second semesters taken together.

7.5 To be eligible for promotion to the 5th semester of the program a student must have successfully cleared at least half of the total subjects including practicals and sessionals of the third and fourth semesters taken together.

7.6 A student promoted to the third/fifth semesters, without having cleared all the papers, will have to appear and pass the backlog papers of the first/third semesters along with the regular examination of the first/third semesters and backlog papers of the

Second/fourth semesters along with the regular examination of the second/fourth semesters.

7.7 A candidate who has secured minimum marks to pass in each paper but has not secured the minimum marks required to pass in the aggregate for the semester concerned may take re-examination in not more than two papers to obtain the aggregate percentage required to pass the semester. The candidate will have to pay the requisite examination fee in order to be eligible for re- examination. In this case the marks secured by the candidate in the earlier examination in the paper concerned will be cancelled.

7.9 (a) Award of Division:

Securing 60% marks and above – Ist division Securing
50% and above but below 60% - IInd division
Securing 45% and above but below 50% - pass

(b) A student who has secured 75% marks and above shall be declared to have passed in first division with honors. However, for this the student must have cleared successfully all the subjects in single attempt in the final year period of his/her study.

(C) Similarly, to be eligible for a gold medal on account of having secured first position, the student must have cleared all subjects in single attempt and passed them with first division.

7.10 For determining merit position of the candidates at the final year level the marks obtained by them in the first, second and final year as described above shall only be considered.

7.11 If a student (who has successfully completed the programme) wishes to reappear in one or more theory papers of the first, second, third, fourth, fifth, sixth semesters for the purpose of improving his/her marks, he/she will be permitted to do so on payment of requisite examination fee along with the regular examinations of that semester; however, the total number of such attempts shall not exceed four theory papers during the span period of the programme. For this his/her previous performance in the paper/papers concerned shall be treated as cancelled. The application for such reappearing/re-examination must be submitted before the next examination of the corresponding semester. However, such candidates shall not be considered for award of gold medal.

7.12 A student to be eligible for award of diploma has to clear all papers offered during four-year programme within the span period of eight years.

8. LATERAL ENTRY

Students who have passed 10+2 or ITI examination from the Board of Technical Education, Rajasthan, or its equivalent with a minimum of 60% marks can be admitted to the Third Semester of the Diploma programme.

9. Attendance: All students are required to have 75% attendance in each subject and there must be 75% attendance of the student before he/she could be permitted to appear in the examination.

10. **RULES FOR CHANGE OF BRANCH FOR THE STUDENTS OF III SEM. DIPLOMA.:**

The faculty, on the basis of applications received from desirous students up to the date and time notified by the Director, will prepare a merit list of the students. The list will be prepared on the basis of overall merit of the 1st (Year) result only and the applications for change of branch will be processed as per the merit list.

ELIGIBILITY CRITERIA:

(a) The students must have passed the I Semester Diploma Examination in all components in one attempt with at least 60% marks in aggregate. The student with back papers or whose result has not been declared will not be considered for change of branch.

(b) In case any student has applied for re-valuation/ re-totaling of his/her marks of I Year Diploma and the result has not been received till the time of change of branch, such a student will not be entitled for change of branch on the basis of his/her subsequently revised result.

PROCEDURE:

1) Applications in a specified format (developed by the faculty) for change of branch will be invited by the Director/Principal of the faculty on the basis of the result of I (Year) Diploma in duplicate, upto the date notified by IASE University. One copy of each such application be sent to IASE University by that date.

2) The students would submit a photo copy of I (Year) Examination mark sheet of that year along with the application. The student may give as many preferences as possible against the vacant seats in respective branch.

3) A seat matrix shall be prepared by the faculty, as per the details of the vacant seats

(admitted through direct admission) in the previous year.

4) Due to change of branch, the strength of student in any branch should not fall short of 75% of the enrolled students in that branch in that year. And under no circumstances, due to change of branch, the number of seats in a particular branch in a college shall exceed the sanctioned strength approved by the AICTE, for that batch.

5) All students who have applied for the change of branch in-time will be called for counseling by the admission council of the faculty and considered for change of branch as per merit, preference and availability of seat. However, at the time of the counseling, if any student wishes to withdraw his/her application he/she can do so by a written request. In case any student does not present himself/herself for counseling, his/her branch will be changed as per the preference mentioned in the application form, merit and availability of seat.

11. RULES FOR THE AWARD OF GRACE MARKS

A. **DIPLOMA (MAIN/SUPPLYMENTARY EXAMINATIONS UNDER THE FACULTIES OF ENGINEERING & TECHNOLOGY.**

Grace marks to the extent of 1% of the aggregate marks prescribed for an examination will be awarded to a candidate failing in not more than 25% of the total number of theory papers, practicals, sessionals, dissertation, viva-voce and the aggregate, as the case may be in which minimum pass marks have been prescribed; provided the candidate passes the examination by the award of such Grace marks. For the purpose of determining the number of 25% of the papers, only such theory papers practicals, dissertation, viva-voce etc. would be considered, of which, the examination is conducted by the University.

N.B.:- If 1% of the aggregate marks or 25% of the papers works out in fraction, the same will be raised to the next whole number. For example, if the aggregate marks prescribed for the examination are 450, grace marks to the extent of 5 will be awarded to the candidate, similarly, if 25% of the total papers is 3.2, the same will be raised to 4 papers which grace marks can be given.

GENERAL:-

- A candidate passes in a paper/ practical or the aggregate by the award of grace marks will be deemed to have obtained the necessary minimum for a pass in that paper/ practical or in the aggregate and shown in the marks sheet to have passed by

  grace. Grace marks will not be added to the marks obtained by a candidate from the examiners nor will the marks obtained by the candidate be subject to any deduction due to award of grace marks in any other paper/ practical or aggregate.
- If a candidate passes the examination but misses First or Second Division by one

  mark, his aggregate will be raised by one mark so as to entitle him for the first or second division, as the case may be. This one mark will be added to the paper in which he gets the least marks and also in the aggregate by showing +1 in the tabulation register below the marks actually obtained by the candidate. The marks entered in the marks-sheet will be inclusive of one grace mark and it will not be shown separately.

- Non appearance of a candidate in any paper will make him ineligible for grace marks. The place of a passed candidate in the examination list will, however be determined by the aggregate marks he secures from the examiners, and he will not, by the award of grace marks, become entitled to a higher division.
- Distinction won in any subject at the examination is not to be forfeited on the score that a candidate has secured grace to pass the examination.

Note: - The Grace marks will be awarded only, if candidate appears in all the papers prescribed for the examination.

TEACHING & EXAMINATION SCHEME

For Diploma in Engineering – Three Year (6 Semester) Full Time Diploma Programme

DIPLOMA IN COMPUTER ENGINEERING – SECOND YEAR

SEMESTER – III

SUBJECT CODE	TITLE	HRS. / WEEK			CREDIT	IA		EXAM		TOTAL
		L	T	P		TH	P	TH	P	
DCS-301/ DCS-301-P	COMPUTER GRAPHICS	3	1	2	5	20	40	80	60	200
DCS-302	FOUNDATION OF COMPUTER SCIENCE	3	-		3	20	-	80	-	100
DCS-303/DCS-303-P	SWITCHING THEORY AND LOGIC DESIGN	3	1	2	5	20	40	80	60	200
DCS-304/DCS-304-P	CIRCUITS AND SYSTEMS	3	1	2	5	20	20	80	30	150
DCS-305/DCS-305-P	DATA STRUCTURE	3	1	2	5	20	40	80	60	200
DCS-306	MANAGEMENT-I	3	1	-	4	20	-	80	-	100
DCS-307	DISCIPLINE & EXTRA CURRICULAR ACTIVITY				1					50
	TOTAL	**18**	**3**	**08**	**28**					**1000**

IA- INTERNAL ASSESSMENT
T- TUTORIAL
L- LECTURE
P- PRACTICAL
TH- THEORY

TEACHING & EXAMINATION SCHEME

For Diploma in Engineering – Three Year (6 Semester) Full Time Diploma Programme

DIPLOMA IN COMPUTER ENGINEERING – SECOND YEAR **SEMESTER – IV**

SUBJECT CODE	TITLE	HRS. / WEEK			CREDIT	IA		EXAM		TOTAL
		L	T	P		TH	P	TH	P	
DCS-401/DCS-401-P	COMPUTER ORGANIZATION AND ARCHITECTURE	3	1	2	5	20	40	80	60	200
DCS-402	THEORY OF COMPUTATION	3	1	-	4	20	-	80	-	100
DCS-403/DCS-403-P	OBJECT ORIENTED PROGRAMMING	3	1	2	5	20	40	80	60	200
DCS-404/DCS-404-P	COMMUNICATION SYSTEMS	3	1	2	5	20	20	80	30	150
DCS-405	ENERGY AUDIT AND MANAGEMENT	3	-	-	3	20		-	80	100
DCS-406/DCS-406-P	DATABASE MANAGEMENT SYSTEMS	3	1	2	5	20	40	80	60	200
DCS-407	DISCIPLINE & EXTRA CURRICULAR ACTIVITY				1					50
	TOTAL	**18**	**5**	**8**	**28**					**1000**

IA- INTERNAL ASSESSMENT **T- TUTORIAL**
L- LECTURE **P- PRACTICAL**
TH- THEORY

TEACHING & EXAMINATION SCHEME

For Diploma in Engineering – Three Year (6 Semester) Full Time Diploma Programme

DIPLOMA IN COMPUTER ENGINEERING – THIRD YEAR **SEMESTER – V**

SUBJECT CODE	TITLE	HRS. / WEEK			CREDIT	IA		EXAM		TOTAL
		L	T	P		TH	P	TH	P	
DCS-501/ DCS-501-P	ALGORITHMS DESIGN AND ANALYSIS	3	1	2	5	20	20	80	30	150
DCS-502/DCS-502-P	SOFTWARE ENGINEERING	3	1	2	5	20	20	80	30	150
DCS-503/DCS-503-P	JAVA PROGRAMMING	3	1	2	5	20	20	80	30	150
DCS-504	INDUSTRIAL MANAGEMENT	3	-	-	3	20	20	80	30	150
DCS-505/DCS-505-P	DIGITAL COMMUNICATION	3	-	2	4	20	20	80	30	150
DCS-506	COMMUNICATION SKILLS FOR PROFESSIONALS	3	-	-	3	20	-	80	-	100
DCS-507-P	PRACTICAL TRAINING (24 WORKING DAYS)	-	-	2	1	-	40	-	60	100
DCS-508	DISCIPLINE & EXTRA CURRICULAR ACTIVITY				1					50
	TOTAL	**18**	**3**	**10**	**27**					**1000**

IA- INTERNAL ASSESSMENT **T- TUTORIAL**
L- LECTURE **P- PRACTICAL**
TH- THEORY

TEACHING & EXAMINATION SCHEME

For Diploma in Engineering – Three Year (6 Semester) Full Time Diploma Programme

DIPLOMA IN COMPUTER ENGINEERING – THIRD YEAR **SEMESTER – VI**

SUBJECT CODE	TITLE	HRS. / WEEK			CREDIT	IA		EXAM		TOTAL
		L	T	P		TH	P	TH	P	
DCS-601/DCS-601-P	COMPUTER NETWORKS	3	-	2	4	20	20	80	30	150
DCS-602/DCS-602-P	OPERATING SYSTEMS	3	-	2	4	20	20	80	30	150
DCS-603	COMPILER DESIGN	3	-	-	3	20	-	80	-	100
DCS-604	ARTIFICIAL INTELLIGENCE	3	1	-	4	20	20	80	30	150
DCS-605/DCS-605-P	MICROPROCESSOR AND MICROCONTROLLER	3	-	2	4	20	20	80	30	150
DCS-606/DCS-606-P	WEB ENGINEERING	3	-	2	4	20	20	80	30	150
DCS-607	PROJECT	-	-	4	2	20	-	80	-	100
DCS-608	DISCIPLINE & EXTRA CURRICULAR ACTIVITY				1					50
	TOTAL	**18**	**1**	**12**	**26**					**1000**

IA- INTERNAL ASSESSMENT **T- TUTORIAL**
L- LECTURE **P- PRACTICAL**
TH- THEORY

Diploma in Computer Science & Engineering

DCS-301 COMPUTER GRAPHICS

UNIT- I

Graphic Systems: Display devices, physical input and output devices, display processors graphics software coordinate representation, graphics functions and standards

Overview, Scan Converting Lines, Scan Converting Circles, Scan Converting. Graphics Hardware Hardcopy Technologies, Display Technologies, Raster-Scan Display Systems, The Video Controller, Random-Scan Display Processor, Input Devices for Operator Interaction, Image Scanners, Antialiasing. Clipping Cohen-Sutherland Algorithm, Cyrus-Beck Algorithm, Midpoint Subdivision algorithm

UNIT- II

Two-Dimensional Transformations: Basic transformations-translations, rotation, matrix representation and homogeneous coordinates, composite transformations-scaling relative to a fixed pivot, rotation about a pivot point, general transformation equations, other transformation – reflection.

UNIT- III

Curves and Surfaces Bezier Curves, 4 point and 5 point Bezier curves using Bernstein Polynomials, Conditions for smoothly joining curve segments, Bezier bi-cubic surface patch, B-Spline Curves, Cubic B-Spline curves using uniform knot vectors, first and second order continuities, Effect of multiple control points at same location, Geometrical Construction, Computing control points given end slopes for a specified curve segment.

UNIT- IV

Three Dimensional Viewing: Introduction, Representation of Three-dimensional objects, Projections, Parallel projections: Orthographic Projections, Oblique Projections. Perspective Projection, Three dimensional clipping, Three-dimensional Cohen-Sutherland clipping algorithm. Hidden Surface Removal: Depth-Buffer(z-buffer) method, Depth-sorting Method(Painter's algorithm)

Reference Books:

1. Foley James D, "Computer Graphics", AW 2nd Ed.
2. D. Hearn & Baker: Computer Graphics with OpenGL, Pearson Education, Third Edition, 2009.
3. Foley, J.D. & Van Dam, A: Fundamentals of Interactive Computer Graphics.
4. Rogers & Adams, "Mathematical Elements for Computer Graphics", McGraw Hill, 1989.

DCS-310-p

List of Experiments:

1. Study of Fundamental Graphics Functions.
2. Implementation of Line drawing algorithms: DDA Algorithm, Bresenham's Algorithm
3. Implementation of Circle drawing algorithms: Bresenham's Algorithm, Mid Point Algorithm.
4. Programs on 2D and 3D transformations
5. Write a program to implement cohen Sutherland line clipping algorithm
6. Write a program to draw Bezier curve.
7. Using Flash/Maya perform different operations (rotation, scaling move etc..) on objects
8. Create a Bouncing Ball using Key frame animation and Path animation.

DCS-302 FOUNDATION OF COMPUTER SCIENCE

UNIT- I

Formal Logic: Preposition, Symbolic Representation and logical entailment theory of Inferences and tautologies, Predicates, Quantifiers, Theory of inferences for predicate calculus, resolution. Techniques for theorem proving: Direct Proof, Proof by Contraposition, proof by contradiction.

UNIT- II

Principle of mathematical induction, principle of complete induction, solution methods for linear and non-linear first-order recurrence relations with constant coefficients, Graph Theory: Terminology, isomorphic graphs, Euler's formula (proof) ,chromatic number of a graph, five color theorem(with proof), Euler &Hamiltonian paths.

UNIT- III

Overview of Sets and set operations, permutation and combination, principle of inclusion, exclusion (with proof) and pigeonhole principle (with proof), Relation, operation and representation of a relation, equivalence relation, POSET, Hasse Diagrams, extremal Elements, Lattices, composition of function, inverse, binary and n-ary operations.

UNIT-IV

Boolean function, Boolean expression, representation & minimization of Boolean function.

Groups, Symmetry, subgroups, normal subgroups, cyclic group, permutation group and cayles's theorem(without proof), cosets lagrange's theorem(with proof) homomorphism, isomorphism, automorphism, rings,

Reference Books:

1. Keneth H. Rosen, "Discrete Mathematics and Its Applications", TMH, seventh edition.
2. C.L. Liu, "Elements of Discrete Mathematics", TMH, 2000.
3. Norman L. Biggs, "Discrete Mathematics", Oxford, second edition.
4. J. P. Trembly& P. Manohar, "Discrete Mathematical Structures with Applications to Computer Science", McGraw Hill, 1997.

DCS-303 SWITCHING THEORY AND LOGIC DESIGN

UNIT- I

Review of various number systems (Binary, Octal, Hexadecimal), Definition of BCD , Gray codes and Excess – 3 codes and their application (without design of code convertors) Parity generation and Checking. Arithmetic Circuits Adder, Subtractor, Parallel binary adder/Subtractor, binary multiplier and dibvider. Combinational Circuits Multiplexers, De-Multiplexers, decoders, encoders

Logic gates NOT , AND, OR, Universal gates- NAND , NOR. EX-OR and EX-NOR gates. Diode and Transistor as a switch Logic Families- RTL,DTL,TTL,ECL,CMOS – (Main features only - without details of circuit connections and working).

UNIT- II

Integrated circuits: - TTL and CMOS logic families and their characteristics. Brief introduction to RAM and ROM.

Sequential Logic Circuits: - Latches and Flip Flops- SR, D, T and MS-JK Flip Flops, Asynchronous Inputs.

Definition of- current and voltage parameters, noise margin, Fanin, Fan-out Boolean Algebra Basics Laws of Boolean Algebra, Logic Gates, Simplifications of Boolean equations using K-maps

UNIT- III

Algorithmic State Machine: Representation of sequential circuits using ASM charts synthesis of output and next state functions, Data path control path partition-based design.

Fault Detection and Location: Fault models for combinational and sequential circuits, Fault detection in combinational circuits; Homing experiments, distinguishing experiments, machine identification and fault detection experiments in sequential circuits.

UNIT- IV

Counters Ripple counter, Synchronous Counter, Modulo Counters, Ring Counter, Twisted Ring

Synchronous Sequential Circuits:- State Tables State Equations and State Diagrams, State Reduction and State Assignment, Design of Clocked Sequential Circuits using State Equations.

Finite state machine-capabilities and limitations, Mealy and Moore models-minimization of completely specified and incompletely specified sequential machines, Partition techniques and merger chart methods-concept of minimal cover table

Reference Books:

1. A Anand Kumar, “Fundamentals of Digital Logic Circuits”, PHI
2. Moris Mano, “Digital Logic and Computer Design”, PHI Publications, 2002.
3. Taub ,Helbert and Schilling, “Digital Integrated Electronics”, TMH

DCS-303-P

List of Experiments:

1. Realize all gates using NAND & NOR gates
2. Realize Half Adder, Full Adder, Half subtracter, Full subtracter
3. Realize a BCD adder
4. Realize a Serial Adder
5. Realize a four bit ALU
6. Realize Master-Save J K Flip-Flop, using NAND/NOR gates
7. Realize Universal Shift Register
8. Realize Self-Starting, Self Correcting Ring Counter
9. Realize Multiplexer and De-Multiplexer
10. Realize Carry Look ahead Adder / Priority Encoder
11. Simulation of PAL and PLA
12. Simulation Mealy and Moore State machines

DCS-304 CIRCUITS & SYSTEMS

UNIT-I

Define signals, their classification and properties, different types of systems, LTI systems and their properties, periodic waveforms and signal synthesis, properties and applications of Laplace transform of complex waveform.

UNIT-II

Graph theory: concept of tree, tie set matrix, cut set matrix and application to solve electric networks.

System modeling in terms of differential equations and transient response of R, L, C, series and parallel circuits for impulse, step, ramp, sinusoidal and exponential signals by classical method and using Laplace transform.

UNIT-III

Positive real function and synthesis of LC, RC, RL Networks in Foster's I and II, Cauer's I& II forms, Introduction of passive filter and their classification, frequency response, characteristic impedance of low pass, high pass, Band Pass and Band reject prototype section.

Unit IV

Two port networks – Introduction of two port parameters and their interconversion, interconnection of two 2-port networks, open circuit and short circuit impedances and ABCD constants, relation between image impedances and short circuit and open circuit impedances. Network functions, their properties and concept of transform impedance, Hurwitz polynomial.

Reference Books

1. S Salivahanan "Circuit Theory " Vikas Publishing House 1st Edition 2014
2. Bell "Electric Circuit" Oxford Publications 7th Edition
3. Valkenburg, "Network analysis" PHI, 2000.
4. Bhise, Chadda, Kulshreshtha, "Engineering network analysis and filter design" Umesh publication, 2000.
5. Kuo, "Network analysis and synthesis" John Weily and Sons, 2nd Edition.

DCS-304-P

List of Experiments

1. Study the transient response of series RLC circuit for different types of waveforms on CRO and verify using MATLAB
2. Study the time response of a simulated linear system and verify the unit step and square wave response of first order and second order, type 0,1 system
3. Using MATLAB determine current in various resistors connected in network using mesh current and node voltage analysis.
4. To determine Z and Y parameters of the given two port network.
5. To determine ABCD parameters of the given two port network.
6. To verify Reciprocity Theorem for the given two port network.
7. To determine Hybrid parameters of the given two port network.
8. To design Cascade Connection and determine ABCD parameters of the given two port network.
9. To design Series-Series Connection and determine Z parameters of the given two port network.
10. To design Parallel-Parallel Connection and determine Y parameters of the given two port network.
11. To design Series-Parallel Connection and determine h parameters of the given two port network
12. Study the frequency response of different filter circuits.

DCS-305 DATA STRUCTURES

UNIT – 1:

Introduction to Data Structures: Basic Terminology, Elementary Data Organizations, Classification of data structures and its operations. Arrays: Representation of single and multidimensional arrays (up to three dimensions) ; sparse arrays - lower and upper triangular matrices and Tri-diagonal matrices; addition and subtraction of two sparse arrays. (Multidimensional, and, sparse arrays, to be given elementary treatment.) Stacks and Queues: Introduction and primitive operations on stack; Stack application: Polish Notations; Evaluation of postfix expression; Conversion from infix to postfix; Introduction and primitive operations on queues; D-queues and priority queues

UNIT – II:

Introduction to and creation of AVL trees and m-way search trees - (elementary treatment to be given); Multilevel indexing and B-Trees: Introduction; Indexing with binary search trees; Multilevel indexing, a better approach to tree indexes; Example for creating a B-tree

UNIT – III:

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

UNIT – IV:

Sorting concept, order, stability, Selection sorts (straight, heap), insertion sort (Straight Insertion, Shell sort), Exchange Sort (Bubble, quicksort), Merge sort (only 2-way merge sort). Searching – List search, sequential search, binary search, hashing concepts, hashing methods (Direct, subtraction, modulo-division, midsquare, folding, pseudorandom hashing), collision resolution (by open addressing: linear probe, quadratic probe, pseudorandom collision resolution, linked list collision resolution), Bucket hashing.

Reference Books:

1. E. Horowitz and S. Sahani, “Fundamentals of Data Structures in C”, 2nd Edition, Universities Press, 2008.
2. S. Sahni and E. Horowitz, “Data Structures”, Galgotia Publications.
3. Tanenbaum: “Data Structures using C”, Pearson/PHI.
4. T .H . Cormen, C . E . Leiserson, R .L . Rivest “Introduction to Algorithms”, PHI/Pearson.
5. A.K.Sharma, “Data Structures”, Pearson
6. Ellis Horowitz and Sartaz Sahani “Fundamentals of Computer Algorithms”, Computer Science Press.

DCS-305-P

List of Experiments

- Problems on arrays on insertion, deletion and searching
- Problems on pointers
- Problems on structures
- Creation of dynamic integer array
- Transformations from infix to postfix, infix to prefix and evaluation
- Programs on transformations
- Program on implementation of stacks
- Programs on implementation of queues such as initialization, insertion, deletion and searching
- Programs on circular queues
- Create a Binary Tree (Display using Graphics) perform Tree traversals (Preorder, Postorder, Inorder) using the concept of recursion.
- Implement insertion, deletion and display (inorder, preorder and postorder) on binary search tree with the information in the tree about the details of a automobile (type, company, year of make).
- To implement Insertion sort, Merge sort, Quick sort, Bubble sort, Bucket sort, Radix sort, Shell sort, Selection sort, Heap sort and Exchange sort using array as a data structure.

DCS-306 MANAGEMENT-I

UNIT-I

Management: Meaning & concept, Management principles (Fayol & Taylor), Management process (in brief), Managerial levels, Roles & skills of a manager, Management Theories (Classical, Neo classical, Behavioral, Systems & Contingency)

UNIT-II

Planning: Meaning, Purpose & process, Decision making: Concept & process, Organizing: Process, Departmentation, Authority & Responsibility relationships, Decentralization. Staffing: Nature & Importance,

UNIT-III

Staffing: Concept, nature & importance of staffing. Directing: Motivation: concept & theories (Maslow's, Herzberg Two factor, McGregor's theory X & Y) , Leadership: Concepts & styles. Controlling: Nature, Importance, significance & Process of control

UNIT-IV

Managing People - Meaning, Need of understanding human behavior in organization, Models of OB, Major concepts in OB (elementary)- Personality, Learning, Perception & Attitude Building

Reference Books:

1. Hand Book of Small Scale Industry P.M. Bhandari
2. Hand Book on Entrepreneurship Development O.P. Harkut
3. Entrepreneurial Development S.S. Khanka
4. Statistical Quality Control Mahohar Mahajan
5. ISO: 9000 Quality System S. Dalela
6. Industrial Management V.K. Sharma & O.P. Harkut
7. Industrial Engg. & Management O.P. Khanana
8. Industrial Engg. & Management T.R. Banga

DCS-401 COMPUTER ORGANIZATION & ARCHITECTURE

UNIT- I

Computer Arithmetic and Register transfer language:
Unsigned notation, signed notation, binary coded decimal, floating point numbers, IEEE 754 floating point standard, Micro-operation, Bus and Memory Transfers, Bus Architecture, Bus Arbitration, Arithmetic Logic, Shift Micro operation, Arithmetic Logic Shift Unit.

UNIT- II

Control Design:
Instruction sequencing & interpretation, Hardwired & Micro Programmed (Control Unit), Micrprogrammed computers, Microcoded CPU: Pentium processor. Specifying a CPU, Design & implementation of simple CPU, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Internal architecture of 8085 microprocessor.

UNIT- III

Instruction set architecture & computer organization:
Levels of programming languages, assembly language instructions, 8085 instruction set architecture, Instruction Codes, Computer Registers, Computer Instructions, Timing & Control, Instruction Cycle, Memory Reference Instructions, Input-Output and Interrupts

UNIT- IV

Asynchronous Data Transfers, Programmed I/O, interrupts, Direct memory Access, Serial communication, UARTs, RS-232-C & RS-422 standard
Memory & Input/Output organization: Memory Technology, Main Memory (RAM and ROM Chips), Virtual memory, High-speed memories

Reference Books:

1. Moris Mano, "Digital Logic and Computer Design", PHI Publications, 2002.
2. J. L Hennessy and D. A. Patterson, "Computer Architecture: A quantitative approach", Morgon Kauffman, 1992.
3. W. Stallings, "Computer organization and Architecture", PHI, 7th ed, 2005.
4. B. Parhami, "Computer Architecture: From Microprocessors to Supercomputers", Oxford University press, 2006.

DCS-401-P

List of Experiments

Experimental work based upon the course Computer Organization & Architecture

NOTE:- At least 6 Experiments from the syllabus must be done in the semester.

DCS-402 THEORY OF COMPUTATION

UNIT- I

Automata and Language Theory: Overview of Theoretical Computer Science (including computationally intractable problems) , Introduction to System software including various phases / Modules in the design of a typical compiler , Chomsky Classification, Finite Automata, Deterministic Finite Automata (DFA), Non-Deterministic Finite Automata (NFA),statement of Kleen's Theorem, Regular Expressions, Equivalence of DFAs, NFAs and Regular Expressions, Closure properties of Regular Language, Non-Regular Languages, Pumping Lemma. Myhill Nerode Theorem, Use of Regular expressions in the Design of scanner (lexical analyzer). Introduction to JFLAP Simulation.

UNIT- II

Context Free Languages: Context Free Grammar (CFG), Parse Trees, Push Down Automata (deterministic and nondeterministic) (PDA), Equivalence of CFGs and PDAs, Closure properties of CFLs, Pumping Lemma, Parsing (including LL(1) , SLR and LR(1) Parsing Method).

UNIT- III

Turing Machines and Computability Theory: Definition of Turing Machine, Extensions of Turing machines, Non – deterministic Turing machines, Equivalence of various Turing Machine Formalisms, Church – Turing Thesis, Decidability, Halting Problem, Reducibility, Recursion Theorem.

UNIT- IV

Complexity Theory: Time and Space measures, Hierarchy theorems, Complexity classes P, NP, space complexity , Savich theorem , L, NL, PSPACE complexity , Post correspondence problem, Probabilistic computation.

References Books:

1. J. C. Martin, “Introduction to Languages and the Theory of Computation”, TMH, 3rd Ed. 2007.
2. Martin J. C., “Introduction to Languages and Theory of Computations”, Third Edition, TMH.
3. Papadimitrou, C. and Lewis, C.L., “Elements of the Theory of Computation”, PHI.
4. Daniel I.A. Cohen, ”Introduction to Computer Theory”,Second Edition, John Wiley.

DCS-403 OBJECT ORIENTED PROGRAMMING

UNIT – 1:

Introduction: Introducing Object-Oriented Approach, Relating to other paradigms (functional, data decomposition). Features of Procedure oriented programming, Basic Concepts of Object Oriented Programming, Benefits of OOP, Applications of OOP, Difference between C and C++, cin, cout, new, delete operators. C++ Environment: Program development environment, the language and the C++ language standards. C++ standard libraries. Introduction to various C++ compilers, C++ standard libraries, Testing the C++ program in Turbo C++/Borland C++/MicroSoft VC++/GNU C++ compiler

UNIT – II:

Classes and Objects: Encapsulation, information hiding, abstract data types, Object & classes, attributes, methods, C++ class declaration, references, this pointer, Function Overloading, Constructors and destructors, instantiation of objects, Default parameter value, C++ garbage collection, dynamic memory allocation, Meta class/abstract classes.

UNIT – III:

Inheritance and Polymorphism: Inheritance, Class hierarchy, derivation – public, private & protected, Aggregation, composition v/s classification hierarchies, Polymorphism, Categorization of polymorphism techniques, Method polymorphism, Polymorphism by parameter, Operator overloading, Parametric polymorphism, Virtual Function, Early v/s Late Binding

UNIT – IV:

Generic Programming – Introduction, templates, template functions, Overloading of template functions, Overriding inheritance methods. Note : A Minimum of 40 Lectures is mandatory for each course

Files and Exception Handling: Persistant objects, Streams and files, Namespaces, The basic stream classes: C++ predefined streams, Error handling during file operations, Command Line Arguments. Types of Exception, Catching and Handling Exceptions

Reference Books:

1. Rumbaugh et. al. “Object Oriented Modelling & Design”, Prentice Hall
2. A.K. Sharma, “Object Oriented Programming using C++”, Pearson
3. G . Booch “Object Oriented Design & Applications”, Benjamin,Cummings.
4. E.Balaguruswamy, “Objected Oriented Programming with C++”, TMH
5. S. B. Lippman & J. Lajoie, “C++ Primer”, 3rd Edition, Addison Wesley, 2000.
6. R. Lafore, “Object Oriented Programming using C++”, Galgotia.
7. D . Parasons, “Object Oriented Programming with C++”,BPB Publication.
8. Steven C. Lawlor, “The Art of Programming Computer Science with C++”, Vikas Publication.

DCS-403-P

List of Experiments

1. Write a program for multiplication of two matrices using OOP.
2. Write a program to perform addition of two complex numbers using constructor overloading. The first constructor which takes no argument is used to create objects which are not initialized, second which takes one argument is used to initialize real and imag parts to equal values and third which takes two argument is used to initialized real and imag to two different values.
3. Write a program to find the greatest of two given numbers in two different classes using friend function.
4. Implement a class string containing the following functions:
   - Overload + operator to carry out the concatenation of strings.
   - Overload = operator to carry out string copy.
   - Overload <= operator to carry out the comparison of strings.
   - Function to display the length of a string.
   - Function tolower( ) to convert upper case letters to lower case.
   - Function toupper( ) to convert lower case letters to upper case.
5. Create a class called LIST with two pure virtual function store() and retrieve().To store a value call store and to retrieve call retrieve function. Derive two classes stack and queue from it and override store and retrieve.
6. Write a program to define the function template for calculating the square of given numbers with different data types.
7. Write a program to demonstrate the use of special functions, constructor and destructor in the class template. The program is used to find the bigger of two entered numbers.
8. Write a program to perform the deletion of white spaces such as horizontal tab, vertical tab, space ,line feed ,new line and carriage return from a text file and store the contents of the file without the white spaces on another file.
9. Write a program to read the class object of student info such as name , age ,sex ,height and weight from the keyboard and to store them on a specified file using read() and write() functions. Again the same file is opened for reading and displaying the contents of the file on the screen.
10. Write a program to raise an exception if any attempt is made to refer to an element whose index is beyond the array size.

DCS-404 COMMUNICATION SYSTEMS

UNIT I

Introduction

Overview of Communication system and Communication channels, Introduction to Analog Communication & Digital Communication technique,.

Angle Modulation

Basic definitions: Phase modulation (PM) & frequency modulation (FM), narrow band frequency modulation, wideband frequency modulation, generation of FM waves, Demodulation of FM waves, frequency division (FDM) multiplexing. Noise Theory: Noise, Types of noise, Addition of Noise due to several sources in series and parallel, Noise sources.

UNIT II

Equivalent Noise Bandwidth, Signal to Noise Ratio, Noise-Figure, Noise Temperature, Calculation of Noise Figure.

Amplitude Modulation

Amplitude modulation, Generation of AM waves, Demodulation of AM waves, DSBSC, Generation of DSBSC waves, Coherent detection of DSBSC waves, single side band modulation, generation of SSB waves, demodulation of SSB waves, vestigial sideband modulation (VSB).

UNIT III

Pulse Modulation

Sampling theory, Aliasing effect , practical sampling , Aperture effect ,uniform and non uniform quantization, signal to quantization noise ratio, Companding, , pulse amplitude modulation (PAM), pulse time modulation, pulse code modulation, Time division (TDM) multiplexing, differential pulse code modulation (DPCM), delta modulation (DM), adaptive delta modulation.

UNIT IV

Digital Modulation,Amplitude, Frequency and phase shift keying, Differential phase shift keying, MSK QPSK and QAM modulation & detection, BER/SER calculation. Introduction to Information Theory: Measurement of Information, mutual information, Shannon's Theorem, channel coding and channel capacity theorem. Huffman code, Lempel–ziv code, Error Control Coding: Parity codes, Hamming codes , Block codes, Syndrome decoding, CRC codes, Introduction to Convolutional coding.

REFERENCE BOOKS:

1. John G Proakis, M.Salehi and G.Bauch "Modern Communication System Using MATLAB" Cengage Learning, 3rd edition, 2013
2. Kennedy, G., "Electronic Communication Systems", McGraw-Hill, 2008, 4th ed.
3. V. Chandra Sekar "Analog Communication", Oxford University Press, Incorporated, 2010

DCS-404-P

List of Experiments

1. Generation of DSB-SC AM signal using balanced modulator.
2. To study amplitude demodulation by linear diode detector
3. Generation of SSB AM signal.
4. To study envelop detector for demodulation of AM signal and observe diagonal peak clipping effect.
5. To generate FM signal using voltage controlled oscillator.
6. To generate a FM Signal using Varactor & reactance modulation.
7. Detection of FM Signal using PLL & foster seelay method.
8. To study Super heterodyne AM receiver and measurement of receiver parameters viz.sensitivity, selectivity & fidelity.
9. To study Pre-emphasis and De-emphasis in FM.
10. Generation of Phase modulated and demodulated signal.

DCS-405 ENERGY AUDIT AND MANAGEMENT

Unit- I

Energy Management & Audit: Definition, energy audit, need, types of energy audit. Energy management (audit) approach-understanding energy costs, bench marking, energy performance, matching energy use to requirement, maximizing system efficiencies, optimizing the input energy requirements, fuel and energy substitution, energy audit instruments and metering, precautions, thermography, smart metering. Basics of Energy and its various forms: Electricity basics – Direct Current and Alternative Currents, electricity tariff, Thermal Basics-fuels, thermal energy contents of fuel, temperature and pressure, heat capacity, sensible and latent heat, evaporation, condensation, steam, moist air and humidity and heat transfer, units and conversion, Metric Ton Oil Equivalent conversions.

Unit- II

Energy Scenario: Commercial and Non-commercial energy, primary energy resources, commercial energy production, final energy consumption, Indian energy scenario, Sectoral energy consumption (domestic, industrial and other sectors), energy needs of growing economy, energy intensity, long term energy scenario, energy pricing, energy security, energy conservation and its importance, energy strategy for the future.

Unit- III

Vapor absorption refrigeration system: Working principle, types and comparison with vapor compression system and saving potential, heat pumps and their applications, section on ventilation system, ice bank system, and performance assessment of window and split room air conditioners, Star labeled pumps, cold storage refrigeration, and humidification system.

Heating, ventilation, air conditioning (HVAC) and Refrigeration System: Introduction to Psychometrics, Vapor compression refrigeration cycle, refrigerants, coefficient of performance, capacity, factors affecting Refrigeration and Air conditioning system performance and savings opportunities.

Pumps and Pumping System: Types, performance evaluation, efficient system operation, flow control strategies and energy conservation opportunities. Energy conservation in boiler feed water pump, pumping systems for municipal drinking water, and sewerage, agriculture pump sets.

Fans and blowers: Types, performance evaluation, efficient system operation, flow control strategies and energy conservation opportunities. Pressure drop calculation.

Unit- IV

Cooling Tower: Types and performance evaluation, efficient system operation, flow control strategies and energy saving opportunities assessment of cooling towers. fan less cooling tower, natural draft cooling tower, cooling water treatment.

Lighting System: Light source, choice of lighting, luminance requirements, and energy conservation avenues. Light Emitting Diodes (LEDs), metal halides, fluorescent tube lights, Compact fluorescent lamps (CFL), labeling scheme, high

efficiency street lighting, electronic ballast, occupancy sensors, energy efficient lighting controls.

Unit- V

Energy conservation in Buildings and Energy Conservation Building Codes (ECBC): About Energy Conservation Building Codes (ECBC), building envelope, insulation, lighting, Heating, ventilation, air conditioning (HVAC), fenestrations, water pumping, inverter and energy storage/captive generation, elevators and escalators, star labeling for existing buildings, Energy Service Companies based case studies.

Diesel/Natural gas Power Generating systems: Factors affecting selection, energy performance assessment of diesel conservation avenues. Waste heat recovery.

DCS-405-P

1. Residential House Wiring Using switches, Fuse, Indicator, Lamp and Energy Meter
2. Types of Wiring
3. Measurements of Electrical Quantities – Voltage, Current, Power and Power Factor in RLC Circuit
4. Measurement of Energy Using Single Phase / Three Phase energy Meter
5. Study Troubleshooting of Electrical Equipment
6. Study of Various Electrical gadgets
7. Assembly of Choke of Small Transformer
8. To prepare a project report on energy audit of following (any one)

8.1 Energy Audit assessments in power plants.
8.2 Energy Audit assessments in steel industry.
8.3 Energy Audit assessments in process industry (cement and textile).
8.4 Energy Audit assessments in buildings and commercial establishments.

DCS-406 DATABASE MANAGEMENT SYSTEMS

UNIT I

Introduction: Purpose of database, data abstraction, data models, instances & schemas, data independence, data definition language, data manipulation language, database manager, database administration

Entity Relationship Model: Entity & Entity sets, relationship sets, mapping constraints, candidate & primary key, entity relationship diagram, reducing E-R diagram to tables.

Relational Model: Concepts of relational model, integrity constraints, extension & intension, relational algebra, relational calculus, commercial query language, modifying the database, comments on relational model.

UNIT – II

Introduction to SQL: Overview , Characteristics of SQL. Advantage of SQL, SQL data types and literals. Types of SQL commands: DDL, DML, DCL. Basic SQL Queries. Logical operators :BETWEEN, IN, AND, OR and NOT Null Values: Disallowing Null Values, Comparisons Using Null Values Integrity constraints: Primary Key, Not NULL, Unique, Check, Referential key Introduction to Nested Queries, Correlated Nested Queries, Set-Comparison Operators, Aggregate Operators: The GROUP BY and HAVING Clauses, Joins: Inner joins, Outer Joins, Left outer, Right outer, full outer joins. Overview of views and indexes

UNIT – III

Relational Data Model: Relational model terminology domains, Attributes, Tuples, Relations, characteristics of relations, relational constraints domain constraints, key constraints and constraints on null, relational DB schema.Codd's Rules Relational algebra: Basic operations selection and projection, Set Theoretic operations Union, Intersection, set difference and division, Join operations: Inner , Outer ,Left outer, Right outer and full outer join. ER to relational Mapping: Data base design using ER to relational language. Data Normalization: Functional dependencies, Armstrong's inference rule, Normal form up to 3 rd normal form

UNIT – IV

Transaction processing and Concurrency Control: Definition of Transaction, Desirable ACID properties, overview of serializability, serializable and non serializable transactions Concurrency Control: Definition of concurrency, lost update, dirty read and incorrect summary problems due to concurrency Concurrency Control Techniques: Overview of Locking,2PL,Timstamp ordering, multiversioning, validation Elementary concepts of Database security: system failure, Backup and Recovery Techniques, authorization and authentication

References Books:

1. R. Elmarsi and SB Navathe, "Fundamentals of Database Systems", Pearson,5th Ed.
2. C.J.Date, A.Kannan, S.Swamynathan, "An Introduction to Database Systems", 8th Edition, Pearson Education, 2006.

3. J. D. Ullman, “Principles of Database Systems”, 2nd Ed., Galgotia Publications, 1999.
4. Vipin C. Desai, “An Introduction to Database Systems”, West Publishing Co.,

DCS-406-P

List of Experiments

1. Design a Database and create required tables. For e.g. Bank, College Database
2. Apply the constraints like Primary Key, Foreign key, NOT NULL to the tables.
3. Write a SQL statement for implementing ALTER, UPDATE and DELETE
4. Write the queries to implement the joins
5. Write the queries for implementing the following functions: MAX (), MIN (),AVG (),COUNT ()
6. Write the queries to implement the concept of Integrity constrains
7. Write the queries to create the views
8. Perform the queries for triggers
9. Perform the following operation for demonstrating the insertion, updation and deletion using the referential integrity constraints

ALGORITHMS DESIGN AND ANALYSIS

Paper Code: DCS-501

UNIT – I

Notion of Algorithm, Growth of functions, Summations, Recurrences: The substitution method, The iteration method, Asymptotic Notations and Basic Efficiency Classes. Use of Big O , θ, Ω in analysis .Mathematical Analysis of few Non-recursive and Recursive Algorithms , Proof of Correctness.

UNIT – II

Sorting and Searching Techniques , Selection Sort , Bubble Sort , Insertion Sort , Sequential Search Binary Search , Depth first Search and Breadth First Search. , Balanced Search trees , AVL Trees , Red-Black trees , Heaps and Heap sort , Hash Tables, disjoint set and their implementation , Divide and conquer Paradigm of Problem solving , complexity analysis and understanding of Merge sort , Quick Sort , Binary Search Trees, Sorting in linear time, Medians and Order statistics.

UNIT – III

Greedy Techniques, Prim's Algorithm, Kruskal's Algorithm , Dijkstra's and Bellman Ford Algorithm , Huffman trees. Knapsack Problem , Dynamic Programming paradigm , Warshall 's and Floyd's Algorithm , Optimal Binary Search trees , Matrix multiplication Problem , 0/1 Knapsack Problem , maximum network flow problem , naive string matching algorithm , string matching with finite automata Knuth morris Pratt algorithm , The Rabin-Karp Algorithm.

UNIT – IV

Backtracking, n-Queen's Problem, Hamiltonian Circuit problem, Subset-Sum problem, Branch and bound, Assignment problem, travelling salesman problem. Introduction to Computability, Polynomial-time verification, NP-Completeness and Reducibility, NP-Completeness Proof, NP-Complete problems, Proof of cook's theorem.

Reference Books:

1. A. V. Aho, J. E. Hopcroft, J. D. Ullman, "The Design and Analysis of Computer Algorithms", Pearson Publication, 2013.
2. Sara Basse, "introduction to Design & analysis",Pearson
3. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, "Computer Algorithms/C++ "Second Edition, Universities Press.

DCS-501-P

List of Experiments

1. To implement following algorithm using array as a data structure and analyse its time complexity.
    a. Merge sort
    b. Quick sort
    c. Bubble sort
    d. Bucket sort
    e. Radix sort
    f. Shell sort
    g. Selection sort
    h. Heap sort
2. To implement Linear search and Binary search and analyse its time complexity.
3. To implement Matrix Multiplication and analyse its time complexity.
4. To implement Longest Common Subsequence problem and analyse its time complexity.
5. To implement Optimal Binary Search Tree problem and analyse its time complexity.
6. To implement Huffman Coding and analyse its time complexity.
7. To implement Dijkstra's algorithm and analyse its time complexity.
8. To implement Bellman Ford algorithm and analyse its time complexity.
9. To implement naïve String Matching algorithm, Rabin Karp algorithm and Knuth Morris Pratt algorithm and analyse its time complexity.

SOFTWARE ENGINEERING

Paper Code: DCS-502

UNIT – I

Introduction: Software Crisis, Software Processes & Characteristics, Software life cycle models, Waterfall, Prototype, Evolutionary and Spiral Models Software Requirements analysis & specifications: Requirement engineering, requirement elicitation techniques like FAST, QFD, Requirements analysis using DFD(with case studies), Data dictionaries & ER Diagrams, Requirements documentation, Nature of SRS, Characteristics & organization of SRS

UNIT – II

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 Management

UNIT – III

Software Design: Cohesion & Coupling, Classification of Cohesiveness & Coupling, Layered arrangement of modules, Function Oriented Design, Object Oriented Design[T1][T2] Software Metrics: Software measurements: What & Why, Token Count, Halstead Software Science Measures, Design Metrics, Data Structure Metrics.

UNIT – IV

Software Testing: Code Review, Testing Process, Types of Testing, Functional Testing, Structural Testing, Test Activities, Unit Testing, Integration Testing and System Testing(Performance Testing and Error Seeding), Debugging Activities. [T1][T2][R1] Software Maintenance: Management of Maintenance, Maintenance Process, Reverse Engineering, Software Re-engineering, Configuration Management, Documentation

Reference:

1. R. S. Pressman, "Software Engineering – A practitioner's approach", 3rd ed., McGraw Hill Int. Ed., 1992.
2. R. Fairley, "Software Engineering Concepts", Tata McGraw Hill, 1997.
3. P. Jalote, "An Integrated approach to Software Engineering", Narosa, 1991.
4. Stephen R. Schach, "Classical & Object Oriented Software Engineering", IRWIN, 1996.
5. James Peter, W Pedrycz, "Software Engineering", John Wiley & Sons
6. I. Sommerville, "Software Engineering", Addison Wesley, 1999.

DCS-502-P

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.

JAVA PROGRAMMING

Paper Code: DCS-503

UNIT I

Importance and features of Java, *Language Construct of java including* Keywords, constants, variables and looping and decision making construct, Classes and their implementation, Introduction to JVM and its architecture including set of instructions. Overview of JVM Programming . Internal and detailed explanation of a valid .class file format. Instrumentation of a .class file, Byte code engineering libraries, Overview of class loaders and Sandbox model of security.

Introducing classes, objects and methods: defining a class, adding variables and methods, creating objects, constructors, class inheritance. Arrays and String: Creating an array, one and two dimensional arrays, string array and methods, Classes: String and String Buffer classes, Wrapper classes: Basics types, using super, Multilevel hierarchy abstract and final classes, Object class, Packages and interfaces, Access protection, Extending Interfaces, packages.

UNIT II

Exception Handling: Fundamentals exception types, uncaught exceptions, throw, throw, final, built in exception, creating your own exceptions,

Multithreaded Programming: Fundamentals, Java thread model: priorities, synchronization, messaging, thread classes, Runnable interface, inter thread Communication, suspending, resuming and stopping threads.

Input/Output Programming: Basics, Streams, Byte and Character Stream, predefined streams, Reading and writing from console and files.

Using Standard Java Packages (lang, util, io, net). Networking: Basics, networking classes and interfaces, using java.net package, doing TCP/IP and Data-gram Programming, RMI (Remote Method Invocation).

UNIT III

Event Handling: Different Mechanism, the Delegation Event Model, Event Classes, Event Listener Interfaces, Adapter and Inner Classes, Working with windows, Graphics and Text, using AWT controls, Layout managers and menus, handling Image, animation, sound and video, Java Applet**.**

The Collection Framework: The Collection Interface, Collection Classes, Working with Maps & Sets

JDBC: **Introduction to DBMS & RDBMS, DBC API, JDBC Application Architecture, Obtaining a Connection, JDBC Models: Two Tier and Three Tier Model, ResultSet, Prepared Statement, Callable Statement**

UNIT IV

Input/Output Stream, Stream Filters, Buffered Streams, Data input and Output Stream, Print Stream Random Access File, JDBC (Database connectivity with MS-Access, Oracle, MS-SQL Server), Object serialization, Sockets, development of client Server applications, design of multithreaded server. Remote Method invocation, Java Native interfaces, Development of a JNI based application.

Collection API Interfaces, Vector, stack, Hashtable classes, enumerations, set, List, Map, Iterators.

Reference Books:

1. Patrick Naughton and Herbertz Schidt, “Java-2 the complete Reference”,TMH
2. E. Balaguruswamy, “Programming with Java”, TMH
3. Horstmann, “Computing Concepts with Java 2 Essentials”, John Wiley.
4. Decker & Hirshfield, “Programming.Java”, Vikas Publication.

DCS-503-P

List of Experiments

1. Create a java program to implement stack and queue concept.
2. Write a java package to show dynamic polymorphism and interfaces.
3. Write a java program to show multithreaded producer and consumer application.
4. Create a customized exception and also make use of all the 5 exception keywords.
5. Convert the content of a given file into the uppercase content of the same file.
6. Develop an analog clock using applet.
7. Develop a scientific calculator using swings.
8. Create an editor like MS-word using swings.
9. Create a servlet that uses Cookies to store the number of times a user has visited your servlet.
10. Create a simple java bean having bound and constrained properties.

INDUSTRIAL MANAGEMENT

Paper Code: DCS-504

UNIT I

Industrial relations- Definition and main aspects. Industrial disputes and strikes. Collective bargaining.

Trade Unionism- Definition, Origin, Objectives of Trade Unions. Methods of Trade unions. Size and finance of Indian Trade unions-size, frequency distribution, factors responsible for the small size. Finance-sources of income, ways of improving finance.

UNIT II

Labour Legislation- Labour management cooperation/worker's participation in management. Factory legislation. International Labour Organization.

UNIT III

Quality Management- What is Quality? Control Charts. Quality is everybody's job. Taguchi Philosophy. Service Quality. What is Total Quality Management (TQM)? Roadmap for TQM. Criticism of TQM. Six Sigma.

UNIT IV

Work Study-Method study and time study. Foundations of work study. Main components of method study. Time study standards. Involvement of worker's unions. Work Sampling. Application of work study to office work.

Reference Books:

1. Sinha, P.R.N., Sinha I.B. and Shekhar S.M.(2013), Industrial Relations, Trade Unions and Labour Legislation. Pearson Education
2. Srivastava, S.C. (2012), Industrial Relations and Labour Laws, Vikas Publishing
3. Shankar R (2012), Industrial Engineering and Management. Galgotia Publications
4. Telsang, M. (2006), Industrial Engineering and Production Management. S.Chand
5. Thukaram, Rao (2004), M.E. Industrial Management. Himalaya Publishing House.

DIGITAL COMMUNICATION

Paper Code: DCS-505

UNIT- I

Introduction to Digital Communication:Review of Sampling theorem, uniform and non-uniform quantization, companding, μ-Law and A-Law compressors, Concept and Analysis of PCM, DPCM, DM and ADM modulators and demodulators, M-ary waveforms, S/N ratio for all modulation, probability of error for PCM in AWGN Channel and other modulation techniques, Duo Binary pulse.
Line coding: NRZ, RZ, Manchester encoding, differential Manchester encoding, AMI coding, high density bipolar code, binary with n-zero substitution codes,

UNIT- II

Random Signal Theory: Analysis of digital receiver, Prediction Filter, Design and Property of Matched filter, Correlator Receiver, Orthogonal Signal, Gram-Schmidt Orthogonalization Procedure, Maximum likelihood receiver, Coherent receiver design, Inter Symbol Interference, Eye Pattern.

UNIT- III

Designing of Receiver: Probability, Concept of Random variable (Stationary, Non stationary, WSS, SSS), Random process, CDF, PDF, Joint CDF, Joint PDF, marginal PDF, Mean, Moments, Central Moment Auto-correlation & Cross-correlation, covariance functions, ergodicity, power spectral density, Gaussian distribution, Uniform distribution, Rayleigh distribution, Binomial distribution, Poission distribution, Weiner distribution, Wiener-Khinchin theorem, Central limit theorem.

UNIT- IV Digital modulation schemes: Coherent Binary Schemes: ASK, FSK, PSK, QPSK, MSK, G-MSK. Coherent M-ary Schemes, Incoherent Schemes (DPSK and DEPSK), Calculation of average probability of error for different modulation schemes, Power spectra of digitally modulated signals, Performance comparison of different digital modulation schemes. Review of 2 Latest Research Paper.

Reference Books:

1. Simon Haykin, “Communication Systems” John Wiley & Sons, Inc 4th Edition.
2. George Kennedy, “Communication System” TMH – 4th Edition
3. B. P. Lathi, “Modern Digital and Analog Communication System” Oxford University Press – 3rd Edition.
4. Digital Communications by John G.Proakis; McGraw Hill.

DCS-505-P

List of Experiments

1. To Study Sampling Theorem.
2. To Study of Pulse Code Modulation and Probability of error.
3. To calculate S/N ratio and Probability of error of Differential Pulse Code Modulation.
4. To calculate S/N ratio and Probability of error of Delta Modulation.
5. To calculate S/N ratio and Probability of error of Adaptive Delta Modulation.
6. To calculate S/N ratio and Probability of error of Amplitude Shift Keying (ASK).
7. To calculate S/N ratio and Probability of error of Phase Shift Keying (PSK).
8. To calculate S/N ratio and Probability of error of frequency Shift Keying (FSK).
9. To calculate S/N ratio and Probability of error Differential Phase Shift Keying Modulation (DPSK).
10. To calculate S/N ratio and Probability of error of Quadrature Phase Shift Keying Modulation (QPSK).
11. To calculate S/N ratio and Probability of error of QAM
12. Faculty can opt for practical of Digital Communication to be performed on Kit.

COMMUNICATION SKILLS FOR PROFESSIONALS

Paper Code: DCS-506

UNIT I

Organizational Communication: Meaning, importance and function of communication, Process of communication, Communication Cycle - message, sender, encoding, channel, receiver, decoding, feedback, Characteristics, Media and Types of communication, Formal and informal channels of communication, 7 C's of communication, Barriers to communication, Ethics of communication (plagiarism, language sensitivity)

Non-Verbal Language: Importance, characteristics, types – Paralanguage (voice, tone, volume, speed, pitch, effective pause), Body Language (posture, gesture, eye contact, facial expressions), Proxemics, Chronemics, Appearance, Symbols.

UNIT II

Introduction to Phonetics: IPA system (as in Oxford Advanced Learner's Dictionary), Speech Mechanism, The Description of Speech Sounds, Phoneme, Diphthong, Syllable, Stress, Intonation, Prosodic Features; Pronunciation; Phonetic Transcription - Conversion of words to phonetic symbols and from phonetic symbols to words. British & American English (basic difference in vocabulary, spelling, pronunciation, structure)

Soft Skills: Personality Development, Self Analysis through SWOT, Johari Window, Interpersonal skills -Time management, Team building, Leadership skills. Emotional Intelligence.Self Development and Assessment- Self assessment, Awareness, Perception and Attitudes, Values and belief, Personal goal setting, Career planning, Self esteem.

UNIT III

Letters at the Workplace – letter writing (hard copy and soft copy): request, sales, enquiry, order, complaint.

Job Application -- resume and cover letter

Listening and Speaking Skills: Importance, purpose and types of listening, process of listening, difference between hearing and listening, Barriers to effective listening, Traits of a good listener, Tips for effective listening. Analytical thinking; Speech, Rhetoric, Polemics; Audience analysis. Telephone Skills - making and receiving calls, leaving a message, asking and giving information, etiquettes.

Meeting Documentation-- notice, memo, circular, agenda and minutes of meeting.

UNIT IV

Report Writing - Significance, purpose, characteristics, types of reports, planning, organizing and writing a report, structure of formal report. Writing an abstract, summary, Basics of formatting and style sheet (*IEEE Editorial Style Manual)*, development of thesis argument, data collection, inside citations, bibliography; Preparing a written report for presentation and submission. Writing a paper for conference presentation/journal submission.

Presentations: Mode, mean and purpose of presentation, organizing the contents, nuances of delivery, voice and body language in effective presentation, time dimension.
Group Discussion: Purpose, types of GDs, strategies for GDs, body language and guidelines for group discussion.
Interview Skills: Purpose, types of interviews, preparing for the interview, attending the interview, interview process, employers expectations, general etiquettes.

References Books:

1. Anna Dept. Of English. Mindscapes: English for Technologists & Engineers PB. New Delhi: Orient Blackswan.
2. Masters, Ann and Harold R. Wallace. Personal Development for Life and Work, 10th Edition.Cengage Learning India, 2012.
3. Institute of Electrical and Electronics Engineers. IEEE Editorial Style Manual. IEEE, n.d. Web. 9 Sept. 2009.
4. Sethi and Dhamija. A Course in Phonetics and Spoken English. PHI Learning, 1999.
5. Khera, Shiv. You Can Win. New York: Macmillan, 2003.

DCS-601 COMPUTER NETWORKS

UNIT–I

Introductory Concepts: Goals and Applications of Networks, Network structure and architecture, the OSI reference model, services, networks topology. **Physical Layer:** The Physical Layer, Theoretical Basis for Data Communication, Guided Transmission Media, Wireless Transmission, Communication Satellites Digital Signal Encoding Formats – NRZ-L, NRZI, bipolar-AMI, Manchester, Differential Manchester, Digital Modulation – ASK, FSK, PSK, PSK, Digitization – Sampling Theorem, PCM, DM, Analog Modulation – Introducing AM, FM, PM, The Mobile Telephone System.

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UNIT II

The Data Link Layer: Data Link Layer Design Issues, Error Detection and Correlation, Flow Control Protocols, Stop-and-wait Flow Control, Sliding – Window Flow Control, Error Control, Stop-and-wait ARQ, Go-back-N, Selective-repeat, Example of Data Link Protocols-HDLC
Medium access sub layer: Channel allocations, ALOHA Protocols, Carrier Sense Multiple Access Protocols, CSMA with Collision Detection, Collision free protocols, Ethernet, wireless LANs, Blue Tooth, Data Link Layer Switching.

UNIT III

Network Layer: Point-to-Point network, routing algorithms, congestion control, internetworking, Quality Control, Internetworking, The Network Layer in the Internet, IP packet, IP addresses, IPv6.

UNIT IV

Transport Layer: Design Issue, connection management, TCP window management, User Datagram Protocol, Transmission Control Protocol, Performance Issues. **Application Layer:** DNS, Electronic Mail, WWW, MUTIMEDIA. **Network Security**: Cryptography and Compression Techniques**.**

Reference Books:

1. Behrouz A.Forouzan, 'Data Communication and Networking', 5E, Tata McGraw Hill, 2013.
2. Uyless Black, "Computer Networks-Protocols, Standards and Interfaces", 2nd edition, PHI, 1996.
3. A. Tannenbaum,"Computer Networks", 5th edition, Pearson.

DCS-601-P

List of Experiments

1. Introduction to Computer Network laboratory
   Introduction to Discrete Event Simulation
   Discrete Event Simulation Tools - ns2/ns3, Omnet++

2. Using Free Open Source Software tools for network simulation – I
   Preliminary usage of the tool ns3 Simulate telnet and ftp between N sources - N sinks (N = 1, 2, 3). Evaluate the effect of increasing data rate on congestion.

3. Using Free Open Source Software tools for network simulation - II
   Advanced usage of the tool ns3
   Simulating the effect of queueing disciplines on network performance - Random Early Detection/Weighted RED / Adaptive RED (This can be used as a lead up to DiffServ / IntServ later).

4. Using Free Open Source Software tools for network simulation - III
   Advanced usage of the tool ns3 Simulate http, ftp and DBMS access in networks

5. Using Free Open Source Software tools for network simulation - IV
   Advanced usage of the tool ns3
   Effect of VLAN on network performance - multiple VLANs and single router.

6. Using Free Open Source Software tools for network simulation - IV
   Advanced usage of the tool ns3
   Effect of VLAN on network performance - multiple VLANs with separate multiple routers.

7. Using Free Open Source Software tools for network simulation - V
   Advanced usage of the tool ns3

   Simulating the effect of DiffServ / IntServ in routers on throughput enhancement.

8. Using Free Open Source Software tools for network simulation - VI
   Advanced usage of the tool ns3
   Simulating the performance of wireless networks

OPERATING SYSTEMS

Paper Code: DCS-602

UNIT I

Overview of an Operating System: Software organization, linking, loading and executing control program for batch processing, time sharing and real time O.S. multi programme, multi processing systems. Various functions of operating System.

Overview of System Software: Compilers, assemblers and loaders

Processes: Process Concept, Process Scheduling, Operation on Processes, Cooperating Processes, Threads.

CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling, Real-Time Scheduling, Algorithm Evaluation

UNIT II

Processor Scheduling: Scheduling levels, pre emptive vs no pre emptive scheduling, priorities, scheduling objective, scheduling criteria, scheduling algorithms, demand scheduling, real time scheduling.

Processes: Introduction, Process states, process management, Interrupts, Interprocess Communication

Threads: Introduction, Thread states, Thread Operation, Threading Models.

Process Synchronization: Mutual exclusion, software solution to Mutual exclusion problem, hardware solution to Mutual exclusion problem, semaphores, Critical section problems. Case study on Dining philosopher problem, Barber shop problem etc.

UNIT III

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Combined Approach to Deadlock Handling.

Device Management: Disk Scheduling Strategies, Rotational Optimization, System Consideration, Caching and Buffering

UNIT IV

File-System Interface: File Concept, Access Methods, Directory Structure.

File-System Implementation: Introduction, File-System Structure, Basic File System, Allocation Methods, Free-Space Management, Directory Implementation.

Security: The Security problem, Goals of protection, Access matrix, Authentication, Program threats,System threats, Intrusion detection , Cryptography

Reference Books:

1. Godbole, “Operating Systems”, Tata McGraw Hill, 3rd edition, 2014
2. Chauhan, “Principles of Operating Systems”, Oxford Uni. Press, 2014
3. Dhamdhere, “Operating Systems”, Tata McGraw Hill, 3rd edition, 2012
4. Loomis, “Data Management & File Structure”, PHI, 2nd Ed.

DCS-602-P

List of Experiments

1. Write a program to implement CPU scheduling for first come first serve.
2. Write a program to implement CPU scheduling for shortest job first.
3. Write a program to perform priority scheduling.
4. Write a program to implement CPU scheduling for Round Robin.
5. Write a program for page replacement policy using a) LRU b) FIFO c) Optimal.
6. Write a program to implement first fit, best fit and worst fit algorithm for memory management.
7. Write a program to implement reader/writer problem using semaphore.
8. Write a program to implement Banker's algorithm for deadlock avoidance.

COMPILER DESIGN

Paper Code: DCS-603

UNIT- I

Brief overview of the compilation process, structure of compiler & its different phases, lexical analyzer, cross compiler, Bootstrapping, quick & dirty compiler, Shift-reduce parsing, operator- precedence parsing, top-down parsing, predictive parsing ,LL(1) and LL(k) grammar, bottom up parsing, SLR, LR(0), LALR parsing techniques.

UNIT- II

Symbol table, data structures and implementation of symbol tables, representing scope information.

Run Time Storage Administration, implementation of a simple stack allocation scheme, storage allocation in block structured languages and non block structured languages, Error, Lexical-phase errors, syntactic-phase errors, semantic errors.

UNIT- III

Design and implementation of a lexical analyzer and parsing using automated compiler construction tools(eg. Lex, YACC, PLY), Syntax-directed translation schemes, implementation of syntax directed translations, intermediate code, postfix notation, three address code, quadruples, and triples, translation of assignment statements, Boolean expressions, control statements, Semantic Analysis, Type Systems, Type Expressions, Type Checker, Type Conversion

UNIT-IV

The principle sources of optimization, loop optimization, the DAG representation of basic blocks, value number and algebraic laws, global dataflow analysis, Object programs, problems in code generation, a machine model, a single code generator, register allocation and assignment, code generation from DAGs, peephole optimization.

Reference Books:

1. Alfred V. Aho & J.D. Ullman, “Compiler Principles ,Techniques& Tools”, Pearson
2.
3. Kakde O.G., “Complier Design”, Laxmi Publication
4. Vinu V. DAS, “Compiler Design Using FLEX and YACC , PHI
5. Jhon R. Levine, Tony Mason and Doug Brown, “Lex &Yacc”, O’Reilly.pdf
6. Andrew W. Appel, Maia Ginsburg, “Modern Compiler Implementation in C”, Cambridge University Press

DCS-604 ARTIFICIAL INTELLIGENCE

UNIT - I

Overview of A.I: Introduction to AI, Importance of AI, AI and its related field, AI techniques, Criteria for success. Problems, problem space and search: Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem. Heuristic search techniques: Generate and test, hill climbing, best first search technique, problem reduction, constraint satisfaction

UNIT - II

Knowledge representation: Definition and importance of knowledge, Knowledge representation, various approaches used in knowledge representation, Issues in knowledge representation. Using Predicate Logic: Represent ting Simple Facts in logic, representing instances and is-a relationship, Computable function and predicate.

UNIT – III

Natural language processing: Introduction syntactic processing, Semantic processing, Discourse and pragmatic processing. Learning: Introduction learning, Rote learning, Learning by taking advice, learning in problem solving, Learning from example-induction, Explanation based learning.

UNIT – IV

Expert System: Introduction, Representing using domain specific knowledge, Expert system shells. LISP and other AI Programming Language

Reference Books:

1. Rich and Knight, “Artificial Intelligence”, Tata McGraw Hill, 1992
2. KM Fu, "Neural Networks in Computer Intelligence", McGraw Hill
3. Russel and Norvig, "Artificial Intelligence: A modern approach", Pearson Education

DCS-605 MICROPROCESSORS AND MICROCONTROLLERS

UNIT – I

Architecture of 8086: Introduction to 8 bit and 16 bit microprocessors, internal architecture of 8086, internal resistors, physical and logical address generation, maximum and minimum modes, clock generation, minimum system, comparison between 8086 and 8088

Programming 8086: Address modes, instruction format, instruction templates and hand assembly, instruction set, data transfer, arithmetic, bit manipulation, string instructions, program transfer and processor control instructions, assembler and assembler directives

UNIT – II

Implementing Standard Program Structures in 8086 Assembly Language: Simple Sequence Programs, Jumps, Flags, and Conditional Jumps, If-Then, if-then-else, and multiple if-then else programs, while-do programs, while-do programs, repeat-until programs, instruction timing and delay loops Strings, Procedures, and macros: the 8086 string instructions, writing and using procedures, writing and using assembler macros 8086 Instruction Descriptions and Assembler Directives.

UNIT – III

8086 System Connections, Timing, and Troubleshooting: A basic 8086 microcomputer System, An example Minimum-mode System, the SDK-86, troubleshooting a simple 8086- based microcomputer, Timing Diagrams 8086 Interrupts and Interrupt Applications: 8086 interrupts and Interrupt Responses, Hardware Interrupt Applications.

UNIT – IV

Interfacing 8086 with 8255, 8254, 8259, 8253, 8251, 8259, 8279.

Brief Introduction to Architecture of 80186, 80286, 80386, 80486, 8087 and Pentium architecture..

References Books:

1. Muhammad Ali Mazidi, “Microprocessors and Microcontrollers”, Pearson, 2006
2. Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D. MCKinlay “The 8051 Microcontroller and Embedded Systems”,2nd Edition, Pearson Education 2008.
3. Kenneth J. Ayala, “The 8086 Microprocessor: Programming & Interfacing The PC”, Delmar Publishers, 2007.
4. Vaneet Singh, Gurmeet Singh, “Microprocessor and Interfacing”, Satya Prakashan, 2007.

DCS-605-P

List of Experiments

1. Write a program to add and subtract two 16-bit numbers with/ without carry using 8086.
2. Write a program to multiply two 8 bit numbers by repetitive addition method using 8086.
3. Write a Program to generate Fibonacci series.
4. Write a Program to generate Factorial of a number.
5. Write a Program to read 16 bit Data from a port and display the same in another port.
6. Write a Program to generate a square wave using 8254.
7. Write a Program to generate a square wave of 10 kHz using Timer 1 in mode 1(using 8051).
8. Write a Program to transfer data from external ROM to internal (using 8051).
9. Design a Minor project using 8086 Micro processor (Ex: Traffic light controller/temperature controller etc)
10. Design a Minor project using 8051 Micro controller

DCS-606 WEB ENGINEERING

UNIT-I

Overview of Internet and web, HTML Tags, Forms & Frames , Introduction to Java Script and Cascading Style Sheets, DHTML, Using various Web Design Tools like Dream Weaver , Gif Animator etc

UNIT-II

ASP.Net, **Working with ASP.Net Web Forms:** Building ASP.Net Page, Building Forms with Web Server Controls, Performing Form Validation with Validation Control, Advanced Control Programming. **Working with ADO.Net:** Introduction to ADO.Net, Binding Data to web Control, Using the DataList and DataGrid Controls, Working with DataSets, Working with XML.

UNIT-III

Working with ASP.Net Applications: Creating ASP.Net Application, Tracking User Sessions, Caching ASP.Net Application, Application Tracking and Error Handling. Securing ASP.Net Applications: Using Form-Based Authentication, Using Windows-Based Authentication, Encrypting Data over the Network.

UNIT-IV

Web Services: Introduction to Service-Oriented Architectures, XML basics, SOAP, SOAP message structure, WSDL, UDDI, Overview of Grid and Cloud Computing.

Latest trends in Web technologies. A Case Study for developing interactive web applications

Reference Books:

1. Web Technologies: A Computer Science Perspective, Jackson, Pearson Education India, 2007.
2. Achyut Godbole,Atul Kahate, “Web Technologies”, McGraw-Hill Education, Third Edition.
3. Uttam K Roy, “Web Technologies”, Oxford University Press, 2012.
4. Chris Bates, "Web Programming", Wiley
5. Web Engineering by Gertel Keppel, Birgit Proll, Siegfried Reich, Werner R., John Wiley.
6. Thinking on the Web: Berner's LEE, Godel and Turing, John Wiley & Sons Inc.

DCS-606-P

List of Experiments

NOTE:- At least 6 Experiments from the syllabus must be done in the semester.