Scheme of Instruction & Syllabi

of

Diploma in Computer Science and Engineering

(Three Year Diploma Course)

II Year

(Effective Session 2014-15)

(Dr. Gaurav Agarwal) **(Dr. R.K. Shukla)**
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STUDY AND EVALUATION SCHEME
Diploma in Computer Science and Engineering
(Effective from session 2014-2015)
YEAR II, SEMESTER III

S. No.	Course Code	SUBJECT	PERIODS			EVALUATION SCHEME					TOTAL	Credit
						SESSIONAL EXAM.				E-SEM.		
			L	T	P	CT	TA	AT	TOTAL			
THEORY												
1	DCS301	Digital Electronics	3	1	0	20	10	10	40	60	100	4
2	DCS302	Operating Systems	3	1	0	20	10	10	40	60	100	4
3	DCS303	Programming in 'C'	3	1	0	20	10	10	40	60	100	4
4	DCS304	Discrete Structures	3	1	0	20	10	10	40	60	100	4
5	DCS305	IT Infrastructure	3	1	0	20	10	10	40	60	100	4
PRACTICAL/TRAINING/PROJECT												
6	DEC351	Digital Electronics Lab	0	0	4	-	-	-	50	50	100	2
7	DCS352	Operating Systems Lab (UNIX/LINUX)	0	0	4	-	-	-	50	50	100	2
8	DCS353	Programming in 'C' Lab	0	0	4	-	-	-	50	50	100	2
9	DCS355	IT Infrastructure Lab	0	0	4	-	-	-	50	50	100	2
10	GP301	Discipline & General Proficiency	-	-	-	-	-	-	100	-	100	1
		TOTAL	15	5	16	100	50	50	500	500	1000	29

L-Lecture, **T-** Tutorial , **P**- Practical , **CT –** Cumulative Test ,**TA –**Teacher Assessment , **AT –** Attendance , **E-Sem –** End Semester Marks

STUDY AND EVALUATION SCHEME
Diploma in Computer Science and Engineering
(Effective from session 2014-2015)
YEAR II, SEMESTER IV

S. No.	Course Code	SUBJECT	PERIODS			EVALUATION SCHEME					TOTAL	Credit
						SESSIONAL EXAM.				E-SEM.		
			L	T	P	CT	TA	AT	TOTAL			
THEORY												
1	DCS401	Data Structures with 'C'	3	1	0	20	10	10	40	60	100	4
2	DCS402	OOP's with C++	3	1	0	20	10	10	40	60	100	4
3	DCS403	Computer Organization	3	1	0	20	10	10	40	60	100	4
4	DCS404	E-commerce	3	1	0	20	10	10	40	60	100	4
5	DAS405	Industrial Management	3	1	0	20	10	10	40	60	100	4
PRACTICAL/TRAINING/PROJECT												
6	DCS451	Data Structures Lab	0	0	4	-	-	-	50	50	100	2
7	DCS452	OOPs Lab	0	0	4	-	-	-	50	50	100	2
8	DCS453	Computer Organization Lab	0	0	4	-	-	-	50	50	100	2
9	DCS454	E-commerce Lab	0	0	4	-	-	-	50	50	100	2
10	GP401	Discipline & General Proficiency	-	-	-	-	-	-	100	-	100	1
		TOTAL	15	5	16	100	50	50	500	500	1000	29

L-Lecture, **T-** Tutorial , **P**- Practical , **CT –** Cumulative Test ,**TA –**Teacher Assessment , **AT –** Attendance , **E-Sem –** End Semester Marks

DIGITAL ELECTRONICS (DCS301)

L T P
3 1 -

Unit-1
Introduction:-Define digital and analog signals and systems, difference between analog and digital signals, Need of digitization and applications of digital systems Number System : Decimal, Binary, Octal, and Hexadecimal systems; Binary Arithmetic, BCD and Gray code. Boolean algebra and the 'Demerger's Theorems.

Unit-2
Logic Gates: BUFFER, NOT, AND, OR, NAND, NAND, NOR, X-OR, and X_NOR gates Combinational Logic Circuits: SOP and POS forms, reduction and inter conversion of forms, logic design using K maps.

Unit-3
Adder & Subtract or circuits : Half adder, full adder, half subtract or, full subtract or; design of all these circuits. using discrete gates. Flip-Flops: RS flip-flop, J-K, D-, T-flip-flops; Racing problem and the Master-Slave J-K flip-flop.

Unit-4
Sequential Logic Circuits: Design of asynchronous and synchronous up/down counters, Shift Registers:SIPO, SISO, PIPO, and PISO register Multiplexers, demultiplexers; decoders and encoders.

Unit-5
Analog to digital and digital to analog converters: Basic terms and definitions, Conversion methods, Types of converters.

Text Books:
1. Malvino & Leach "Digital Principles and Applications", Tata McGraw Hill, Delhi.
2. Gayakwad R.A. "Op-Amps and Linear Integrated Circuits", Prentice Hall of India, Delhi.
Reference Books:
1. Taub & Schilling "Digital Electronics", Tata McGraw Hill, Delhi.
2. Nagrath IJ. "Electronics Analog and Digital", Prentice Hall of India Ltd Delhi.
3. Jain R.P. "Modern Digital Electronics", Tata McGraw Hill Delhi.

OPERATING SYSTEMS (DCS302)

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Unit- 1
Introduction to Operating system, Functions of Operating System, Classification of Operating systems: Batch, Interactive, Time sharing, Real Time System, Multiprocessor Systems, Multiuser Systems. Operating System Components, Operating System services.

Unit- 2
Process, Process states, Process Transition Diagram, Process Control Block (PCB), CPU Scheduling: Objectives of Scheduling, Types of Scheduler, Scheduling types, Scheduling Criteria, Scheduling Algorithms: FCFS, SJF, SRT, Priority, Round Robin.

Unit- 3
Deadlock: System model, Necessary Condition for Deadlock, Resource Allocation Graph, Recovery from deadlock.

Unit- 4
Memory Management: Logical Address, Physical Address, Memory Fragmentation, Paging, Introduction to Virtual memory, Page replacement algorithms: FIFO, LRU, Thrashing.

Unit- 5
I/O Management and Disk Scheduling: I/O devices, I/O buffering, Disk scheduling: FCFS, SSTF, C-SCAN, C-LOOK.

Text Book:
1. Silberschatz, Galvin and Gagne, "Operating Systems Concepts", Wiley.
2. Milenekovie, "Operating System Concept", McGraw Hill, Delhi.
3. Petersons, "Operating Systems", Addision Wesley.
4. Dietal, "An Introduction to Operating System", Addision Wesley.
5. Sibsankar Halder and Alex A Aravind, "Operating Systems", Pearson Education

Reference Books:
1. D M Dhamdhere, "Operating Systems : A Concept based Approach", 2nd Edition, TMH
2. William Stallings, "Operating Systems: Internals and Design Principles", 6th Edition, Pearson Education

COMPUTER PROGRAMMING USING 'C' (DCS303)

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Unit-1
Algorithm and Programming Development steps in development of a program, Flow charts, Algorithm development, Program Debugging.
Program Structure:- I/o statements, assign statements. Constants, variables and data types, Operators and Expressions, Standards and Formatted, Use of Header & Library files.

Unit-2
Control Structures: Introduction, Decision making with IF – statement, IF – Else and Nested IF, While and do-while, for loop, Break and switch statements.

Unit-3
Functions:- Introduction to functions, Global and Local Variables, Function Declaration, Standard functions, Parameters and Parameter Passing, Call –by value/reference, Recursion.

Unit-4
Introduction to Arrays, Array Declaration and Initialization, Single and Multidimensional Array. Arrays of characters.

Unit-5
Pointers:- Introduction to Pointers, Address operator and pointers, Declaring and Initializing pointers.

Text Books:
1.Salaria RS, Application Programming in C , Khanna Book Publishing Co (P) Ltd. New Delhi.
2.Schaum Series, Programming in C , McGraw Hills Publishers, New York.
References Books:
3.Yashwant Kanetkar, Exploring – BPB Publications, New Delhi.

DISCRETE STRUCTURES (DCS-304)

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Unit-1
Set Theory: Introduction, Types of set, Subsets, Operation of sets, Cartesian Products of setsMultisets, Venn Diagrams

Unit-2
Relations: Definition, Operations on relations, Properties of relations, Composite Relations, equivalence relation,Equality of relations, Order of relations, Matrix Representation of relations.

Unit-3
Functions: Definition, Classification of functions, Operations on functions, Difference between function and a relation,Even and odd functions.
Natural Numbers: Introduction, Mathematical Induction: principle of mathematical Induction
Partial order sets: Definition, Partial order sets, Combination of partial order sets or Component of Poset, Hasse diagram.

Unit-4
Boolean Algebra: Introduction, Axioms and Theorems of Boolean algebra, Algebraic manipulation of Boolean expressions. Simplification of Boolean Functions, Logic gates, Digital circuits.
Propositional Logic: Proposition, well formed formula, Truth tables, Tautology, Satisfiability, Contradiction, Algebra of proposition.

Unit-5
Graphs: Definition and terminology, Representation of graphs, simple graph,Multigraph and pseudo graph,Matrix representation of graph, Bipartite graphs, Planar graphs, Euler and Hamiltonian paths,
Text Book*:*

1. ThomasKoshy, Discrete Mathematics with Applications, Elsevier Pub. 2008

Reference Books:

1. Kenneth H. Rosen, Discrete Mathematics and Its Applications, 6/e, McGraw-Hill, 2006.
2. B. Kolman, R.C. Busby, and S.C. Ross, Discrete Mathematical Structures, 5/e, Prentice Hall, 2004.
3. E.R. Scheinerman, Mathematics: A Discrete Introduction, Brooks/Cole, 2000.
4. R.P. Grimaldi, Discrete and Combinatorial Mathematics, 5/e, Addison Wesley, 2004.
5. Jean Paul Trembley, R Manohar, Discrete Mathematical Structures with Application to Computer Science, McGraw-Hill, Inc. New York, NY, 1975.
6: Swapan Kumar Sarkar: Discrete Mathematics, S.CHAND & Company Ltd.

IT INFRASTRUCTURE (DCS305)

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Unit-1
Information Technology, Computer Hardware, Computer Software, Network and Internet, Computing Resources, Design Issues, Requirements, IT System Management Process

Unit-2
Service Delivery Process, Service Level Management, Financial Management, Service Management, Capacity Management, Availability Management

Unit-3
Service Support Process, Configuration Management, Incident Management, Problem Management, Change Management, Release Management Backup & Storage, Archive & Retrieve, Disaster Recovery,

Unit-4
Space Management, Database & Application Protection, Bare Machine Recovery, Data Retention Security, Computer and internet Security, Physical Security,

Unit-5
Introduction to Cyber Ethics, Intellectual Property, Privacy and Law, Computer Forensics, Ethics and Internet, Cyber Crimes

Reference Books:
1. Godbole, "Information Systems Security" Willey
2. Sood, "Cyber Laws Simplified" McGraw Hill
3. P.Gupta, 'IT infrastructure & its Management" PHI

DIGITAL ELECTRONICS LAB (DCS-351)

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1. Study of TTL gates – AND, OR, NOT, NAND,

2. Study of TTL gates – NOR, EX-OR, EX-NOR.

3. Design & realize a given function using K-maps and verify its performance.

4. To verify the operation of multiplexer .

5. To verify the operation of Demultiplexer.

6. To verify the operation of comparator.

7. To verify the truth tables of S-R, J-K,

8. To verify the truth tables of T & D type flip flops.

OPERATING SYSTEMS LAB (DCS-352)

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1. Introduction to DOS commands.
2. Introduction to Unix commands
3. Introduction to VI editor commands.

L T P
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1. To execute a sample C program to study the basic structure of C program.
2. To be familiar with keywords and identifiers through some program.
3. To apply constant, variables and different types of data types.
4. To write program using Arithmetic, Relational, Logical and Assignment operators.
5. To write program to implement increment & decrement operators and to find the greatest between two numbers using conditional operator.
6. To evaluate an expression to study operator precedence and associativity.
7. To use formatted scanf( ) and printf( ) functions for different types of data.
8. WAP to implement simple if-else statement, ladder if-else and nested if-else statements.
9. WAP to implement 'Switch-case' statement with and without break statement.
10. WAP to implement 'for' loop.
11. WAP to implement 'while' and do-while loop.
12. WAP to implement 1-D & 2-D array.
13. WAP to find the sum of two 2-Dimnesion array.

IT Infrastructure Lab (DCS355)

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1. Configure the IP addressing and subnetting on a LAN using "ifconfig".
2. Check the basic IP connectivity using "ping" command.
3. Create a text file containing records of employees in text form line wise.
4. Save this file and edit its copy for some changes and save it.
5. Use "diff" command to generate a patch for the original file.
6. Use the "patch" command to patch the original file to make it similar to the edited copy.

Data Structures with "C" (DCS-401)

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Unit-1
Introduction: Basic Terminology, Elementary Data Organization, Structure operations, Algorithm complexity .
Arrays: Array Definition, Representation and Analysis, Single and Multidimensional Arrays, application of arrays,

Unit– 2
Stacks: Implementation of stack, Operations on Stacks: Push & Pop,
Application of stack: Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using stack.
Queues: Array implementation of queues, Operations on Queue: Create,Add, Delete.

Unit – 3
Linked list: Representation and Implementation of Singly Linked Lists, Traversing and Searching of Linked List, Overflow and Underflow, Insertion and deletion to/from Linked Lists.

Unit-4
Trees: Basic terminology, Binary Trees, Binary tree representation, Tree traversal (pre-order, post-order and in-order).

Unit – 5
Searching and Hashing: Sequential search, binary search, comparison and analysis, Concept of Hashing.
Sorting: Algorithms and their analysis- Insertion Sort, Bubble Sorting, Quick Sort, Merge Sort.

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Text Books:
1. Horowitz and Sahani, "Fundamentals of data Structures", Galgotia Publication Pvt. Ltd., New
Delhi.
2. R. Kruse etal, "Data Structures and Program Design in C", Pearson Education Asia, Delhi2002
3. A. M. Tenenbaum, "Data Structures using C & C++", Prentice-Hall of India Pvt. Ltd., New
Delhi.
4. K Loudon, "Mastering Algorithms with C", Shroff Publisher & Distributors Pvt. Ltd.

OOP's with C++ (DCS-402)

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Unit-1
History of C++. Basic concept of OOPs-Objects, Classes, Object. Difference between C , C++ & Java.

Unit-2
Encapsulation, Data Abstraction, Inheritance, Polymorphism.

Unit-3
Structure of a C++ program, Comments, Variables, Identifiers, Data types. Declaration of variables, Initialization of variables, Constants.

Unit-4
Operator and control structures, Types of Operators. Priority of Operators. Arrays-Initializing arrays, Strings.

Unit-5
Classes and objects- Introduction to class, Class Definition, Classes and Objects, Access specifiers – Private, Public and Protected. Member functions of the class. Constructor and destructor.

References:
1. Herbert Schildt, "C++ the Complete Reference ", III edition, TMH 1999
2. Balagurusamy, Entrepreneurial "Object Oriented programming with C++", TMH
3. Barkakatin "objects oriented programming in C++" PHI 1995.

COMPUTER ORGANIZATION (DCS-403)

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Unit-1

Introduction: Digital computer generation, computer types and classifications, Stored program concept Von Neumann architecture , functional units and their interconnections, buses, types of buses and bus arbitration.

Unit-2

Number representation (sign magnitude, 1's and 2's complement), IEEE standard for floating point representation. Addition and subtraction of signed 2's complement numbers, Booths multiplication algorithm.

Unit-3

Central Processing Unit: Processor organization, general register organization, stack organization and addressing modes, Instruction types, Instruction formats, instruction cycle

Unit -4
Input / Output: Peripheral devices: I/O devices, I/O interface, Interrupts, types of interrupts, Modes of Data Transfer: Programmed I/O, interrupt initiated I/O and Direct Memory Access.

Unit-5
Memory: Basic concept and hierarchy, semiconductor RAM memories, ROM memories. Cache memories: concept , address mapping and replacement. Auxiliary memories: magnetic disk, magnetic tape and optical disks Introduction to concept of virtual memory.

Reference Books :
1. William Stalling, " Computer Organization", PHI
2. Morris Mano," Computer System Architecture", PHI
3. Vravice,Hamacher & Zaky, "Computer Organization", TMH
4. John P Hays, " Computer Organization", McGraw Hill

E-COMMERCE (DCS-404)

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Unit-1
Electronic Commerce: Overview, Definitions, Advantages & Disadvantages of E-Commerce, Threats of E–Commerce, Rules & Regulations for Controlling E–Commerce, Cyber Laws.

Unit-2
Technologies: Relationship between E–Commerce & Networking, Different Types of Networking for E–Commerce, Internet, Intranet & Extranet Requirement for E–Commerce.

Unit-3
Business Models of E–commerce: Model Based on Transaction Type, E–Governance. E–Strategy: Overview, Strategic Methods for developing E–commerce.

Unit-4
Introduction to E–Payment System: Payment through card system, E–Cheque, E–Cash, E–Payment Threats & Protections. E–Marketing:. Home shopping, Tele-marketing, Risk of E –Commerce: Overview, Security for E – Commerce,

Unit-5
Security Standards, Introduction to Cryptography, Introduction to Password Systems. E-Commerce relation with ERP and Internet, Future Directions in e-commerce

References :

1. E-Commerce,M.M. Oka, EPH
2. Kalakotia, Whinston : Frontiers of Electronic Commerce , Pearson Education.
3. Bhaskar Bharat : Electronic Commerce - Technologies & Applications.TMH
4. Loshin Pete, Murphy P.A. : Electronic Commerce , Jaico Publishing Housing.
5. Murthy : E – Commerce , Himalaya Publishing.
6. E – Commerce : Strategy Technologies & Applications, Tata McGraw Hill.
7. Global E-Commerce, J. Christopher & T.H.K. Clerk, University Press
8. Beginning E-Commerce, Reynolds, SPD
9. Krishnamurthy, E-Commerce Mgmt, Vikas

Industrial Management (DAS405)

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Unit-1
PRINCIPLES OF MANAGEMENT: Definition of management, Administration organization, Functions management, Planning, Organizing, Co-ordination and control, Structure and function of industrial organizations, Leadership- Need for leadership, Factors to be considered for accomplishing effective leadership,

Unit-2
Communication -Importance, Processes, Barriers to communication, Making communication, Effective, formal and informal communication, Motivation - Factors determining motivation, Positive and negative motivation, Methods for improving motivation, Incentives, Pay promotion and rewards, Controlling - Just in time.

Unit-3
HUMAN AND INDUSTRIAL RELATIONS: Human relations and performance in organization, Understand self and others for effective behavior, Industrial relations and disputes, Characteristics of group behavior and Trade unionism, Mob psychology, Labor welfare, Workers participation in management.

Unit-4
PERSONNEL MANAGEMENT:
Responsibilities of human resource management - Policies and functions, Selection - Mode of selection - Procedure - training of workers, Job evolution and Merit rating - Objectives and importance wage and salary administration - Classification of wage.

Unit-5
INTELLECTUAL PROPERTY RIGHTS :Introduction to IPR (Patents, Copy Right, Trade Mark),Protection of undisclosed information, Concept and history of patents, Indian and International Patents Acts and Rules,Patentable and Nonpatentable invention including product versus Process.

Text Book:
1. L.M.Prasad,"Principal of Management", S.Chand Publications.
2. T.N Chhabra,"Principal and Pactice of Management",Dhanpat Rai & Sons.

DATA STRUCTURES with 'C' LAB (DCS451)

L T P
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1. Implementation of two Addition of Matrices.
2. Implementation of two Multiplication of Matrices.
3. Implementation of Transpose of Matrix.
4. Implementation 0f Reverse an input string.
5. Implementation of Binary Search.
6. Implementation of Bubble Sort.
7. Implementation of Insertion sort.
8. Implementation of Quick Sort.
9. Implementation of Stack Using Array.
10. Implementation of Queue Using Array.
11. Implementation of Stack Using Single Linked List.
12. Implementation of Postfix Expression Evaluation.

OOP's with C++ Lab (DCS452)

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1. Write a Program in C++ to print your name.
2. Write a Program in C++ to add two numbers.
3. Write a Program in C++ to find average of three numbers.
4. Write a Program in C++ to find whether a given number is even or odd.
5. Write a Program in C++ to find greatest of three numbers.
6. Write a program in C++ to print first 10 natural numbers.
7. Write a Program in C++ to input 10 numbers in an array and print them.
8. Write a Program in C++ to input a 2*2 matrix and print all its elements.
9. Write a program in C++ to transpose a Matrix.
10. Define a class stack in C++ with 3 Public Members with following Description:

      a) A data member top=-1
      b) Stack [100].
      c) Public members functions:
      d) A function PUSH( ) to insert value into the stack.
      e) A function POP() to delete an element from the stack.
      f) A function DISPLAY( ) to display the stack.

COMPUTER ORGANIZATION LAB (DCS453)

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 1. Bread Board Implementation of Flip-Flops.
2. Bread Board implementation of counters & shift registers.
3. Bread Board implementation of Binary Adder.
4. Bread Board implementation of Seven Segment Display.

E-Commerce LAB (DCS454)

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As per Requirement of Syllabus.