

SWAMI VIVEKANAND UNIVERSITY, SIRONJA, SAGAR (M.P.)



SYLLABUS

For

**Diploma in Computer Science Engg.
Semester -III & IV**

**Swami Vivekanand University, Sironja Sagar
2013-2014**



Swami Vivekanand University Sagar (M.P)

PROGRAMME NAME : Three years Diploma in **Computer Science and Engineering**
 Name of Scheme : **Jul. 2013** Implemented from Session 2013– 2014
 Scheme of Studies and Examinations for : **III SEMESTER** Exam Code:

COURSE CODE	COURSE TITLE	PAPER CODE	THEORY COMPONENT							PRACTICAL COMPONENT					TOTAL		
			LECTURES	CONTINUOUS EVALUATION		END OF THE TERM/ SEMESTER EVALUATION			TOTAL MARKS	PRACTICAL Hrs. Per Week	CONTINUOUS EVALUATION	END OF THE TERM/ SEMESTER EVALUATION		TOTAL			
				Hrs. Per Week	TERM WORK	PROGRESSIVE TESTS (TWO)		THEORY PAPER				LAB. WORK	PRACTICAL / ORAL EXAMINATION (VIVA)				
				I	II	NO.	MARKS	DURATION (Hrs)		NO.	MARKS		DURATION (Hrs.)				
301	Operating System	DCS-301	4	10	10	10	1	70	3	100	4	20	1	30	3	50	150
302	Computer programming using C	DCS-302	4	10	10	10	1	70	3	100	4	20	1	30	3	50	150
303	Computer Network	DCS-303	4	10	10	10	1	70	3	100	4	20	1	30	3	50	150
304	Microprocessor & Application	DCS-304	4	10	10	10	1	70	3	100	4	20	1	30	3	50	150
305	English Communication	DCS-305	4	10	10	10	1	70	3	100	-	-	-	-	-	-	100
306	Industrial Training	DCS-306															
307	Professional Activities										02	Grade to be awarded					
	TOTAL		20	50	50	50	5	350	-	500	14	80	3	120		200	700

1. Number of Theory Papers : 5

Passing Marks for (a) Theory : 33%

2. Total Theory Marks	:	350
3. Number of Practicals	:	3
4. Total Practical Marks	:	150
5. Total marks of Sessional +Prog. Asst.	:	150
6. Grand Total	:	700

(b) Practical : 40%

(c) Sessional : 60%



Swami Vivekanand University Sagar (M.P)

PROGRAMME NAME : Three years Diploma in **Computer Science and Engineering**
 Name of Scheme : : **Jul. 2013** Implemented from Session 2013– 2014
 Scheme of Studies and Examinations for : **IV SEMESTER** Exam Code:

COURSE CODE	COURSE TITLE	PAPER CODE	THEORY COMPONENT								PRACTICAL COMPONENT						TOTAL		
			LECTURES	CONTINUOUS EVALUATION		END OF THE TERM/ SEMESTER EVALUATION			TOTAL MARKS	PRACTICAL Hrs. Per Week	CONTINUOUS EVALUATION	END OF THE TERM/ SEMESTER EVALUATION			TOTAL				
				Hrs. Per Week	TERM WORK	PROGRESSIVE TESTS (TWO)		THEORY PAPER				LAB. WORK	PRACTICAL / ORAL EXAMINATION (VIVA)						
						I	II	NO.					MARKS	DURATION (Hrs)		NO.		MARKS	DURATION (Hrs.)
401	Data Structure using C	DCS-401	4	10	10	10	1	70	3	100	4	20	1	30	3	50	150		
402	Database Management System	DCS-402	4	10	10	10	1	70	3	100	4	20	1	30	3	50	150		
403	Computer Organization	DCS-403	4	10	10	10	1	70	3	100	4	20	1	30	3	50	150		
404	Management Information System	DCS-404	4	10	10	10	1	70	3	100	-	-	-	-	-	-	100		
405	Software Engineering	DCS-405	4	10	10	10	1	70	3	100	-	-	-	-	-	-	100		
406	Technical Communication	DCS-406																	
407	Professional Activities										02	Grade to be awarded							
	TOTAL		20	50	50	50	5	350	-	500	14	60	3	90		150	650		

1. Number of Theory Papers : 5

Passing Marks for (a) Theory : 33%

2. Total Theory Marks	:	350
3. Number of Practicals	:	3
4. Total Practical Marks	:	150
5. Total marks of Sessional +Prog. Asst.	:	150
6. Grand Total	:	650

(b) Practical : 40%

(c) Sessional : 60%

OPERATING SYSTEMS

Third Semester

Course Code: DCS 301	L	T	P	C
	3	2	-	4

Course Contents:

Unit - I

Introduction: [02] Operating System and Function, Evolution of Operating System, Batch, Interactive, Time Sharing and Real Time System, System Protection. Operating System Structure: [04], ' System Components, System Structure, Operating System Services. **(8 Lectures)**

Unit - II

Concurrent Processes: [06] Process Concept, Principle of Concurrency, Producer / Consumer Problem, Critical Section, Problem, Semaphores, Classical Problems in Concurrency, Inter Processes Communication, Process Generation, Process Scheduling. **(8 Lectures)**

Unit - III

CPU Scheduling: [05] Scheduling Concept, Performance Criteria Scheduling Algorithm, Evolution, Multiprocessor Scheduling. Deadlock: [05] System Model, Deadlock Characterization, Prevention, Avoidance and Detection, Recovery From Deadlock Combined Approach. **(8 Lectures)**

Unit - IV

Memory Management: [06] Basic Machine, Resident Monitor, Multiprogramming with Fixed Partition, Multiprogramming With Variable Partition, Multiple Base Register, Paging, Segmentation, Paged Segmentation, Virtual' Memory Concept, Demand Paging, Performance, Paged Replaced Algorithm. **(8 Lectures)**

Unit - V

I/O Management & Disk Scheduling: [04] I/O Devices and The Organization of I/O Function, I/O Buffering, Disk I/O, Operating System Design Issues. File System: [04] File Concept, File Organization and Access Mechanism, File Directories, File Sharing, Implementation Issues. **(8 Lectures)**

Project work

A project work will be assigned to the students by the subject faculty. It will be of 10 marks and will be evaluated by the faculty itself. The topic of the project will be decided by the faculty and students will work in a group of 3 – 5 on each topic. The topic should be related to the subject taught by the faculty and should have proper utility and importance to enhance his practical skill & knowledge.

Text Book:

1. Milenekovie, "Operating System Concept", McGraw Hill.
2. Petersons, "Operating Systems", Addison Wesley.
3. Dietal, "An Introduction to Operating System", Addison Wesley.
4. Tannenbaum, "Operating System Design and Implementation", PHI.
5. Gary Nutt, "Operating System, A Modern Perspective", Addison Wesley.

References Books:

1. Stalling, William, "Operating System", Maxwell Macmillan
2. Silveschatza, Peterson J, "Operating System Concepts", Willey.
3. Crowley, "Operating System", TMH.

COMPUTER PROGRAMMING USING 'C'

Third Semester

	L	T	P	C
Course Code: DCS 302	3	2	-	4

Course Contents:

Unit-1

Steps in development of a program, Flow charts, Algorithm and 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. **(8 Lectures)**

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.

Functions:- Introduction to functions, Global and Local Variables, Function Declaration, Standard functions, Parameters and Parameter Passing, Call – by value/reference, Recursion. **(8 Lectures)**

Unit-3

Introduction to Arrays, Array Declaration and Initialization, Single and Multidimensional Array. Arrays of characters. **(8 Lectures)**

Unit-4

Pointers:- Introduction to Pointers, Address operator and pointers, Declaring and Initializing pointers, Assignment through pointers, Pointers and Arrays.

Structures and Unions:- Declaration of structures, Accessing structure members, Structure Initialization, Arrays of structures, Unions. **(8 Lectures)**

Unit-5

Strings:- Introduction, Declaring and Initializing string variables, Reading and writing strings, String handling functions, Array of strings

Files:- Introduction, File reading/writing in different modes, File manipulation using standard function types. **(8 Lectures)**

Project work

A project work will be assigned to the students by the subject faculty. It will be of 10 marks and will be evaluated by the faculty itself. The topic of the project will be decided by the faculty and students will work in a group of 3 – 5 on each topic. The topic should be related to the subject taught by the faculty and should have proper utility and importance to enhance his practical skill & knowledge.

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:-

1. Yashwant Kanetkar, *Exploring* – BPB Publications, New Delhi.

COMPUTER NETWORK

Third Semester

Course Code: DCS303	L	T	P	C
	3	2	-	4

Course Contents:

Unit-1

Networks Basics:- What is network, Models of network computing, Networking models, Peer-to – peer Network, Server Client Network, LAN, MAN and WAN, Network Services, Topologies, Switching Techniques. **(8 Lectures)**

Unit-2

OSI Model:- Standards, Open System Interconnection Reference Model, OSI Physical layer concepts, OSI Data-link layer concepts, OSI Networks layer concepts, OSI Transport layer concepts, OSI Session layer concepts, OSI presentation layer concepts, OSI Application layer concepts. **(8 Lectures)**

Unit-3

Introduction to TCP/IP :- Concept of physical and logical addressing, Different classes of IP addressing, special IP address. Sub netting and super netting, Loop back concept, IPV4 packet Format, Need of IPV6.

Network Architecture:- ARC net specifications, Ethernet Specification and Standardization: 10 mbps (Traditional Ethernet), 10 mbps (Fast Ethernet) and 1000 mbps (Gigabit Ethernet), Introduction to Media Connectivity (Leased lines, ICDN, PSTN, RF, VSAT, Optical and IPLC). **(8 Lectures)**

Unit-4

Network Connectivity:- Network connectivity Devices, NICs, Hubs, Repeaters, Multiplexers, Modems, Routers and Protocols, Firewall, ATM, VOIP and Net-to-Phone Telephony, Laws and Protocols. **(8 Lectures)**

Unit-5

Error Detection:- Source of errors in data communication. Effect of errors, data error rate and its dependency on data transfer rates. Error detection through parity bit, block parity to detect double errors and correct single errors. General principles of error detection and correction using cyclic redundancy checks.

Wireless Networking:- Basics of Wireless: Wireless MAN, Networking, Wireless LAN, Wi-Fi, WiMax and Broadband Wireless and Bluetooth technology. **(8 Lectures)**

Project work

A project work will be assigned to the students by the subject faculty. It will be of 10 marks and will be evaluated by the faculty itself. The topic of the project will be decided by the faculty and students will work in a group of 3 – 5 on each topic. The topic should be related to the subject taught by the faculty and should have proper utility and importance to enhance his practical skill & knowledge.

TEXT BOOKS:-

1. Tanenbaum, *Computer Networks*, Prentice Hall of India, New Delhi.
2. Forouzan, *Data Communications and Networking*, Tata McGraw Hill, New Delhi.
3. William Stallings, *Data and Computer Communication*, Pearson Education, New Delhi
4. Peter Hudson, *Local Area Networks*.
5. Neil Jenkins, *Understanding Local Area Network*.
6. *Area Networks by Stan Schatt*, Prentice Hall of India, New Delhi
7. *Network+ Lab manual*, - BPB Publications -by Tami Evanson
8. *Networking Essentials* – BPB Publications New Delhi
9. *Computer Network and Communications* , Cyber Tech Publications, New Delhi.

References Books:-

1. Linux – The complete Reference by Richard Peterson, Tata McGraw Hill, New Delhi.
2. Dee Annleblanc and
3. Issac Yates, *Linux – Install and Configuration Black Book*, IDG Books India Private Limited, Delhi.
4. *Unleashed Linux*, TechMedia Publishers, New Delhi

MICROPROCESSORS & APPLICATION

Third Semester

Course Code: DCS 304	L	T	P	C
	3	2	-	4

Course Contents:

Objective: The study of microprocessors in terms of architecture, software and interfacing techniques leads to the understanding of working of CPU in a microcomputer. The development in microprocessors of 32 bit architecture brings them face-to-face with mainframe finding employment in R&D, assembly, repair and maintenance of hardware of microprocessors and computers. **(8 Lectures)**

Unit I

Evolution of Microprocessor, Typical organization of a microcomputer system and functions of its various blocks, Microprocessor, its evolution, function and impact on modern society. Architecture of a Microprocessor (With reference to 8085 microprocessor) Concept of Bus, bus organization of 8085 Functional block diagram of 8085 and function of each block, Pin details of 8085 and related signals, Demultiplexing of address/data bus of read/write control signals, Steps to execute a stored programme. **(Lectures 08)**

Unit II

Memories and I/O interfacing Memory organization, Concept of memory mapping, partitioning of total memory space. Address decoding, concept of I/O, mapped I/O and memory mapped I/O. Interfacing of memory mapped I/O devices. Concept of stack and its function Basic RAM Cell, N X M bit RAM, Expansion of word length and capacity, static and dynamic RAM, basic idea of ROM, PROM, EPROM and EEPROM. **(Lectures 08)**

Unit III

Programming (with respect to 8085 microprocessor), Brief idea of machine and assembly languages, Machines and Mnemonic codes., Instruction format and Addressing modes. Identification of instructions as to which addressing mode they belong., Concept of Instruction set. Explanation of the instructions of the following groups of instruction set ,Data transfer groups, Arithmetic Group, Logic Group, Stack, I/O and Machine Control Group., Programming exercises in assembly language. **(Lectures 08)**

Unit IV

Instruction Timing and Cycles ,Instruction cycle, machine cycle and T-states, Fetch and execute cycle. Interrupts: Concept of interrupt, Mask able and non mask able, Edge triggered and level triggered interrupts, Software interrupt, Restart interrupts and its use, Various hardware interrupts of 8085, Servicing interrupts, extending interrupt system. **(Lectures 08)**

Unit V

Data transfer techniques :Concept of programmed I/O operations, synchronous data transfer (hand shaking), Interrupt driven data transfer, DMA, Serial output data, Serial input data. Peripheral devices:8255 PPI and 8253 PIT,8257 DMA controller,8279 Programmable KB/Display Interface., Communication Interface Adapter. **(Lectures 08)**

Project work

A project work will be assigned to the students by the subject faculty. It will be of 10 marks and will be evaluated by the faculty itself. The topic of the project will be decided by the faculty and students will work in a group of 3 – 5 on each topic. The topic should be related to the subject

taught by the faculty and should have proper utility and importance to enhance his practical skill & knowledge.

Text Books:

1. Ramesh S Gaonker, *Microprocessor Architecture, Programming and Applications with 8080/8085*, Willey Eastern Ltd. New Delhi
2. Dr BP Singh, *Microprocessor and Microcontrollers*, Galgotia Publications, New Delhi

Reference Books:

1. Refiquzzaman, *Microprocessor and Microcomputers*, Prentice Hall of India Ltd., New Delhi.
2. Mathur, *Introduction to Microprocessors*, Tata McGraw Hill, New Delhi.

Third Semester
English Communication

Course Code: DIP 301

L	T	P	C
2	0	2	3

Course Content:

Unit I

Functional Grammar: Active, Passive voice, Conditional Sentences, Syntax, Concord, Common Errors. **(8 hours)**

Practical (oral): To make students practice the above mentioned grammatical RULES in the practical classes. **(2 hours)**

Unit II

Communication: Meaning & Importance of Communication, Process of Communication, Language as a tool of Communication. **(8 hours)**

Practical (Oral): To make students speak on their understanding of Communication in English. **(2 hours)**

Unit III

Writing Skills: Reporting events, Writing newspaper reports, Bio-data making, Writing of C.V. & Resumes, Writing job application. **(8 hours)**

Practical (Oral): To make students practice writing on the above mentioned processes. **(2 hours)**

Unit IV

Listening Skills: The listening process, hearing & listening, types of listening, Barriers to listening. **(8 hours)**

Practical (oral): To make student develop the skills of listening & thus improve their speaking skills. **(2 hours)**

Recommended Books:

1. Raman Meenakshi & Sharma Sangeeta – Technical Communication – Principles & Practices, - ONP, N. Delhi
2. Wren & Martin : High School English Grammar & Composition- S.Chand & Co. N.Delhi

NOTE:

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

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

OPERATING SYSTEM LAB (LINUX)

Third Semester

Course Code: DCS 351

L	T	P	C
-	-	4	2

LIST OF PRACTICALS

Installing Linux

1. Creating and managing user accounts
2. Practice on Linux commands
3. Practice on Visual Interface (V.I.) commands
4. Write and execute at least 10 programs in Linux using shells such as
 - Factorial of numbers
 - Even/odd numbers
 - Fibonacci series
 - Prime numbers
 - Arrange the numbers
 - Reverse of numbers
 - Lower case to upper case
 - Greatest of three numbers etc.
5. Installing and configuring X-windows
6. Create file and folder
7. Searching a file
8. Installation of device drivers
9. Creating user accounts
10. Customizing desktop
11. Setting monitor resolution

Evaluation of Practical Examination:

Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a 5 point scale which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

Evaluation scheme:

PRACTICAL PERFORMANCE & VIVA DURING THE SEMESTER (40 MARKS)			VIVA (10 MARKS)	TOTAL INTERNAL (50 MARKS)
EXPERIMENT (25 MARKS)	ATTENDANCE (10 MARKS)	QUIZ (5 MARKS)		

External Evaluation (50 marks)

The evaluation would also be done by the external Examiner based on the experiment conducted during the examination.

RECOMMENDED BOOKS

1. Richard Peterson, *Linux – The Complete Reference*, Tata McGraw Hill, New Delhi
2. Die Annleblanc and Issac Yates, *Linux – Install and Configuration Black Book*, IDG Books India Private Ltd., Delhi.
3. *Unleashed Linux*, Tech Media Publishers.

C PROGRAMMING LAB Third Semester

Course Code: DCS 352

L	T	P	C
-	-	4	2

LIST OF PRACTICALS:

1. Write a Program (WAP) to calculate temperature in Fahrenheit to Celsius using formula $C = (F - 32) / 1.8$.
2. WAP to calculate Sum & average of N numbers.
3. WAP to calculate roots of quadratic equation $ax^2 + bx + c = 0$.
 $b^2 - 4ac > 0$ real root
 $B^2 - 4ac < 0$ imaginary root
4. WAP to convert integer arithmetic to a given number of day and month.
5. WAP to find maximum out of 3 numbers a, b & c.
6. WAP to find minimum out of 3 numbers a, b & c.
7. WAP to find e^b .
8. WAP to find factorial of positive integer.
9. WAP to find sum of series up to n number, $2+5+8+\dots\dots\dots+n$.
10. WAP to print all the number between 1 to 100 which are divisible by 7.
11. WAP to generate Fibonacci series up to n.
12. WAP to find position in class first =360, second=240, third=120 otherwise fail. Read marks of 3 subjects.
13. Write a function to calculate area of circle.
14. Write an iterative function to calculate factorial of given number.
15. Write a recursive function to calculate factorial of given number.
16. WAP to find whether number is prime or not.
17. WAP to find even & odd up to a given limit.
18. WAP to find that the enter character is a letter or digit.
19. WAP to find addition of two matrix of $n \times n$ order.
20. WAP to find multiplication of two matrix of $n \times n$ order.

Evaluation of Practical Examination:

Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a 5 point scale which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

Evaluation scheme:

PRACTICAL PERFORMANCE & VIVA DURING THE SEMESTER (40 MARKS)			VIVA (10 MARKS)	TOTAL INTERNAL (50 MARKS)
EXPERIMENT (25 MARKS)	ATTENDANCE (10 MARKS)	QUIZ (5 MARKS)		

External Evaluation (50 marks)

The evaluation would also be done by the external Examiner based on the experiment conducted during the examination.

COMPUTER NETWORK LAB

Third Semester

Course Code: DCS 353

L	T	P	C
-	-	4	2

LIST OF PRACTICALS:

1. Identification of various networks components
 - connections, BNC, RJ-45, I/O box
 - Cables, Co-axial, twisted pair, UTP
 - NIC (network interface card)
 - Switch, hub
2. Sketch wiring diagrams of network cabling considering a computer lab of 20 systems
3. Interfacing with the network card (Ethernet)
4. Preparing the networks
5. Establishment of a LAN
6. Use of protocols in establishing LAN
7. Trouble shooting of networks
8. Installation of network device drivers
9. Installation of networks (Peer to Peer Networking client server interconnection)
10. Use/installation of proxy server

Evaluation of Practical Examination:

Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a 5 point scale which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

Evaluation scheme:

PRACTICAL PERFORMANCE & VIVA DURING THE SEMESTER (40 MARKS)			VIVA (10 MARKS)	TOTAL INTERNAL (50 MARKS)
EXPERIMENT (25 MARKS)	ATTENDANCE (10 MARKS)	QUIZ (5 MARKS)		

External Evaluation (50 marks)

The evaluation would also be done by the external Examiner based on the experiment conducted during the examination.

MICROPROCESSORS LAB

Third Semester

Course Code: DCS 354

L	T	P	C
-	-	4	2

LIST OF PRACTICALS

1. Study of 8085 Microprocessor Kit used in laboratory Familiarization with Kit and identification of its various parts like keyboard, Memory, Timer, Interrupt Controller, Display Unit, Interface Unit.
2. Writing an assembly language program using mnemonics and test them on 8 BIT

MICROPORCESSOR KIT

- Addition of two, 8 bit numbers.
 - Subtraction of 8 bit numbers.
 - Multiplication of 8 bit numbers.
 - Division of 8 bit numbers.
 - Finding average of N given Integers.
 - Finding maximum number out of three has given numeric.
 - To arrange the data array in ascending and descending order.
 - Addition of two 16 Bit numbers.
 - Setting up 0 to 09 count BCD additions, BCD subtraction and other exercises given by the Lab-Incharge.
3. Study of interfacing cards of AID and D/A converter
 4. Study of 8255, 8257, 8259, 8279, 8253 study card using a 8 bit Microprocessor
 5. Some exercises of assembly language programs using a 8255 input & output ports.

Evaluation of Practical Examination:

Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a 5 point scale which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

Evaluation scheme:

PRACTICAL PERFORMANCE & VIVA DURING THE SEMESTER (40 MARKS)			VIVA (10 MARKS)	TOTAL INTERNAL (50 MARKS)
EXPERIMENT (25 MARKS)	ATTENDANCE (10 MARKS)	QUIZ (5 MARKS)		

External Evaluation (50 marks)

The evaluation would also be done by the external Examiner based on the experiment conducted during the examination.

INDUSTRIAL TRAINING

Course Code: DCS 355

L	T	P	C
-	-	-	4

Students will undergo Industrial exposure of two to three weeks in any industry or reputed organization after the II semester examination in summer vacation. The evaluation of this training shall be included in the III semester evaluation.

The student will be assigned a faculty guide who would be the supervisor of the student. The faculty would be identified before the end of the II semester and shall be the nodal officer for coordination of the training.

Students will also be required to prepare an exhaustive technical report of the exposure during the III semester which will be duly signed by the officer under whom training was taken in the industry/ organization. The covering format shall be signed by the concerned office in-charge of the training in the industry. The officer-in-charge of the trainee would also give his rating of the student in the standard University format in a sealed envelope to the Principal of the Polytechnic.

The student at the end of the III semester will present his report about the training before a committee constituted by the Principal of the Polytechnic which would be comprised of at least three members comprising of the Department Coordinator, Class Coordinator and a nominee of the Principal. The students guide would be a special invitee to the presentation. The seminar session shall be an open house session. The internal marks would be the average of the marks given by each member of the committee separately in a sealed envelope to the Principal.

The marks by the external examiner would be based on the report submitted by the student which shall be evaluated by the external examiner and cross examination done of the student concerned.

Not more than three students would form a group for such industrial exposure submission.

The marking shall be as follows.

Internal: 50 marks

By the Faculty Guide - 25 marks

By Committee appointed by the Principal – 25 marks

External: 50 marks

By Officer-in-charge trainee in industry – 25 marks

By External examiner appointed by the University – 25 marks

DATA STRUCTURES USING 'C'

Fourth Semester

	L	T	P	C
Course Code: DCS 401	3	2	-	4

Course Contents:

Unit-1

Fundamental Notations:- Problem solving concept, top down and bottom up design, structured programming, Concept of data types, variables and constants, Concept of pointer variables and constants. **(8 Lectures)**

Unit-2

Arrays

Concept of Arrays, Single dimensional array, Two dimensional array storage strategy of multidimensional arrays, Operations on arrays with Algorithms (searching, traversing, inserting, deleting) **(8 Lectures)**

Unit-3

Linked Lists:- Introduction to linked list and double linked list, Representation of linked lists in Memory, Traversing a linked list, Searching linked list, Insertion and deletion into linked list, Application of linked lists, Doubly linked lists, Traversing a doubly linked lists, Insertion and deletion into doubly linked lists. **(8 Lectures)**

Unit-4

Stacks, Queues and Recursions:- Introduction to stacks, Representation of stacks, Implementation of stacks, Uses of stacks, Introduction to queues, Implementation of queues (with algorithm), Circular Queues, De-queues, Recursion. **(8 Lectures)**

Unit-5

Binary search trees Traversing Binary Trees (Pre order, Post order and In order), Searching, inserting and deleting binary search trees.

Sorting and Searching :- Introduction, Search algorithm (Linear and Binary), Sorting algorithms (Bubble Sort, Insertion Sort, Quick Sort, Selection Sort, Merge Sort, Heap Sort).

(8 Lectures)

Project work

A project work will be assigned to the students by the subject faculty. It will be of 10 marks and will be evaluated by the faculty itself. The topic of the project will be decided by the faculty and students will work in a group of 3 – 5 on each topic. The topic should be related to the subject taught by the faculty and should have proper utility and importance to enhance his practical skill & knowledge.

TEXT BOOKS:-

- 1) Salaria RS, *Data Structures and Algorithm Using C*, Khanna Book Publishing Co. (P) Ltd. New Delhi
- 2) Patel R.B., *Expert data structures with C* – Khanna Publishers, New Delhi.
- 3) *Data structures* – Schaum's Outline Series – McGraw Hill.
- 4) *Data structures* – O.G. Kakde and U.A. Deshpande.

- 5) Kruse, *Data Structures*.
- 6) Sanjiv Sofat, *Data Structures*, Khanna Publishers, New Delhi.
- 7) Horwitz and Sartaj Sahni, *Data Structures*.
- 8) Tanenbaum, *Data Structures*, Prentice Hall of India, New Delhi.
- 9) Dale and Lily, *Pascal and Data Structure*.
- 10) *Data Structure*, Schaum's Series, McGraw Hills Publications.
- 11) Tenenbaum, *Data Structure using Pascal*, Prentice Hall of India.
- 12) Kruse Robert, *Data Structure using C*, Prentice Hall of India.
- 13) Kanekar Yashwant, *Data Structure through C*, BPB Publications.
- 14) Srivastava SK, *Data Structure through C in depth*, Deepali Srivastava, BPB Publications.

REFERENCE BOOKS:-

- 1) Glenn W. Rowe, *Introduction to Data Structure and Algorithm with C++*, Prentice Hall of India.
- 2) Chattopadhyay Sameeran, *Data Structure through "C" Language*, Matangini Chottopadhyay, BPB Publications.
- 3) DOEACC, *Data Structure through "C" Language*, BPB Publications.
- 4) Shukla, *Data Structure using "C" Lab Workbook*, BPB Publications.

DATABASE MANAGEMENT SYSTEM (DBMS)

Fourth Semester

	L	T	P	C
Course Code: DCS 402	3	2	-	4

Course Contents:

Unit-1

Database Systems; Database and its purpose, Characteristics of the database approach, Advantages and disadvantages of database systems. Classification of DBMS Users; Actors on the scene, Database Administrators, Database Designers, End Users, System Analysts and Application Programmers, Workers behind the scene (DBMS system designers and implementers, tool developers, operator and maintenance personnel). **(8 Lectures)**

Unit-2

Database System Concepts and Architecture:- Data models, schemas, instances, data base state. DBMS Architecture; The External level, The conceptual level, The internal level, Mappings. Data Independence; Logical data Independence, Physical data Independence. Database Languages and Interfaces; DBMS Language, DBMS Interfaces. Classification of Database Management Systems. **(8 Lectures)**

Unit-3

Data Modeling using E.R. Model (Entity Relationship Model) :-Data Models classification; File based or primitive models, traditional data models, semantic data models. Entities and Attributes, Entity types and Entity sets, Key attribute and domain of attributes, Relationship among entities. **(8 Lectures)**

Unit-4

Relational Model:- Relational Model Concepts: Domain, Attributes, Tuples and Relations. Relational constraints and relational database schemes; Domain constraints, Key constraints and constraints on Null. Relational databases and relational database schemes, Entity integrity, referential integrity and foreign key. **(8 Lectures)**

Unit-5

Normalization:- Non-loss decomposition and functional dependencies, First, Second and Third normal forms, Boyce/Codd normal form.

SQL using Oracle:- SQL * Plus. DDL (Data Definition Languages): Creating Tables, Creating a table with data from another table, Inserting values into a table, updating columns of a Table, Deleting Rows, Dropping a Table. DML (Data Manipulation Language): Database Security and Privileges, Grant and Revoke Command, Maintaining Database Objects, Commit and Rollback, various types of select commands, various types of Join. **(8 Lectures)**

Project work

A project work will be assigned to the students by the subject faculty. It will be of 10 marks and will be evaluated by the faculty itself. The topic of the project will be decided by the faculty and students will work in a group of 3 – 5 on each topic. The topic should be related to the subject taught by the faculty and should have proper utility and importance to enhance his practical skill & knowledge.

TEXT BOOKS

- 1) Dr Renu Vig and Ekta Walia, *Fundamentals of Database Management Systems* by, - an ISTE, Publication, New Delhi.

REFERENCE BOOKS:-

- 1) Alexis Leon and Mathews Leon, *Database Management Systems*; Vikas Publishing House Pvt. Ltd., New Delhi

COMPUTER ORGANIZATION

Fourth Semester

Course Code: DCS 403	L	T	P	C
	3	2	-	4

Course Contents:

Unit-I

Introduction:- Number representation; fixed and floating point number representation, IEEE standard for floating point representation. Error detection and correction codes: Hamming code. Digital computer generation, computer types and classifications, functional units and their interconnections, buses, bus architecture, types of buses and bus arbitration. Register, bus and memory transfer. **(8 Lectures)**

Unit-II

Central Processing Unit:- Addition and subtraction of signed numbers, look ahead carry adders. Multiplication: Signed operand multiplication, Booths algorithm and array multiplier. Division and logic operations. Floating point arithmetic operation. Processor organization, general registers organization, stack organization and addressing modes. **(8 Lectures)**

Unit-III

Control Unit:- Instruction types, formats, instruction cycles and sub cycles (fetch and execute etc) , micro-operations, execution of a complete instruction. Hardwire and micro programmed control: microprogramming sequencing, wide branch addressing, micro-instruction with next address field, pre-fetching microinstructions, concept of horizontal and vertical microprogramming. **(8 Lectures)**

Unit-IV

Memory:- Basic concept and hierarchy, semiconductor RAM memories, 2D & 2 1/2D memory organization. ROM memories.

Cache memories:- concept and design issues, performance, address mapping and replacement) Auxiliary memories: magnetic disk, magnetic tape and optical disks Virtual memory: concept implementation. **(8 Lectures)**

Unit-V

Input / Output: - Peripheral devices, I/O interface, I/O ports, Interrupts: interrupt hardware, types of interrupts and exceptions. Modes of Data Transfer: Programmed I/O, interrupt initiated I/O and Direct Memory Access., I/O channels and processors. Serial Communication: Synchronous & asynchronous communication, standard communication interfaces. **(8 Lectures)**

Project work

A project work will be assigned to the students by the subject faculty. It will be of 10 marks and will be evaluated by the faculty itself. The topic of the project will be decided by the faculty and students will work in a group of 3 – 5 on each topic. The topic should be related to the subject

taught by the faculty and should have proper utility and importance to enhance his practical skill & knowledge.

Text Books:

1. Patterson, *Computer Organisation and Design*, Elsevier Pub. 2009
2. William Stalling, “ *Computer Organization*”, PHI
3. Vravice, Hamacher & Zaky, “*Computer Organization*”, TMH
4. Mano,” *Computer System Architecture*”, PHI

Reference Book:

1. John P Hays, “ *Computer Organization*”, McGraw Hill
2. Tannenbaum,” *Structured Computer Organization*’, PHI

MANAGEMENT INFORMATION SYSTEM

Fourth Semester

Course Code: DCS 404	L	T	P	C
	3	2	-	4

Course Contents:

Unit I:

INTRODUCTION- Information Technology, Computer Hardware, Computer Software, Network and Internet, Computing Resources.

IT INFRASTRUCTURE- Design Issues, Requirements, IT System Management Process, Service Management Process, Information System Design, IT Infrastructure Library. **(8 Lectures)**

Unit II:

SERVICE DELIVERY PROCESS- Service Delivery Process, Service Level Management, Financial Management, Service Management, Capacity Management, Availability Management.

(8 Lectures)

Unit III:

SERVICE SUPPORT PROCESS- Service Support Process, Configuration Management, Incident Management, Problem Management, Change Management, Release Management

STORAGE MANAGEMENT- Backup & Storage, Archive & Retrieve, Disaster Recovery, Space Management, Database & Application Protection, Bare Machine Recovery, Data Retention.

(8 Lectures)

Unit IV:

SECURITY MANAGEMENT- Security, Computer and internet Security, Physical Security, Identity Management, Access Management. Intrusion Detection, Security Information Management.

(8 Lectures)

Unit V:

IT ETHICS- Introduction to Cyber Ethics, Intellectual Property, Privacy and Law, Computer Forensics, Ethics and Internet, Cyber Crimes

EMERGING TRENDS:- in IT- Electronics Commerce, Electronic Data Interchange, Mobile Communication Development, Smart Card, Expert Systems.

(8 Lectures)

Project work

A project work will be assigned to the students by the subject faculty. It will be of 10 marks and will be evaluated by the faculty itself. The topic of the project will be decided by the faculty and students will work in a group of 3 – 5 on each topic. The topic should be related to the subject taught by the faculty and should have proper utility and importance to enhance his practical skill & knowledge.

Text Books:-

1. Goel Ritendra, *Computer Application in Management*, New Age International Publishers, New Delhi.
2. Chowdhury G.G., *Text Retrieval Systems in information Management*, New Age International Publishers, New Delhi.

Reference Book:

1. Bhunia C.T., *Information Technology Network and Internet* by, New Age International Publishers, New Delhi.

SOFTWARE ENGINEERING

Fourth Semester

Course Code: DCS 405	L	T	P	C
	3	2	-	4

Course Contents:

Unit I

Introduction to software engineering, Importance of software, The evolving role of software, Software Characteristics, Software Components, Software Applications, Software Crisis, Software engineering problems, Software Development Life Cycle, Software Process. **(8 Lectures)**

Unit II

Analysis Principles, Water Fall Model, The Incremental Model, Prototyping, Spiral Model, role of management in software development. Design principles, problem partitioning, abstraction, and top down and bottom up-design, structured approach, functional versus object oriented approach, Cohesion, Coupling, Fourth generation techniques. **(8 Lectures)**

Unit III

Top-Down and Bottom –Up programming, structured programming, information hiding, programming style and internal documentation. Testing principles, Levels of testing, Testing Life cycle, functional testing, structural testing, test plane, test case specification, Verification & validation, Unit testing, Integration Testing, Alpha & Beta testing, system testing and debugging. **(8 Lectures)**

Unit IV

The Management spectrum- (The people, the product, the process, the project), cost estimation, project scheduling, staffing, software configuration management, Structured Vs Unstructured maintenance, quality assurance, project monitoring, risk management. **(8 Lectures)**

Unit V

Reliability issues, Reliability metrics, Reliability growth modeling, Software quality, ISO 9000 certification for software industry, SEI capability maturity model, comparison between ISO & SEI CMM. CASE and its Scope, CASE support in software life cycle, documentation, project management, Reverse Software Engineering, Architecture of CASE environment. **(8 Lectures)**

Project work

A project work will be assigned to the students by the subject faculty. It will be of 10 marks and will be evaluated by the faculty itself. The topic of the project will be decided by the faculty and students will work in a group of 3 – 5 on each topic. The topic should be related to the subject taught by the faculty and should have proper utility and importance to enhance his practical skill & knowledge.

Text Books:

1. Pressman, Roger S., “*Software Engineering: A Practitioner’s Approach*”, McGraw Hill
2. Jalote, Pankaj, “*Software Engineering*”, Narosa
3. Schaum’s Series, “*Software Engineering*”, TMH
4. Alexis, Leon and Mathews Leon, “*Fundamental of Software Engineering*”, Vikas Publications.

Reference Books:

1. Sommerville, Ian, “*Software Engineering*”, AWL, 2000
2. Bell, “*Software Engineering for students*”, Pearson Education
3. Kapil Govil, *Beginner Computer Science Software Engineering*”, Selective & Scientific Books, ISBN 81 – 89128 – 07 – 8

Technical Communication

Fourth Semester

Course Code: DIP 401

L	T	P	C
2	0	2	3

Course Content:

Unit I

Pre-requisites of Technical Written Communication: One Word Substitution, Spelling process, words often confused and misused, Technical terms. (8 hours)

Practical (oral):

To make students practice the above mentioned topics & take care of the technical terms & also use those in different sentences. (2 hours)

Unit II

Technical Communication: Nature, origin & development, salient features, significance, Difference between Technical Communication & General Writing. (8 hours)

Practical (oral) : To make students speak on the development of Technical Communication. (2 hours)

Unit III

Forms of Technical Communication: What is a Report ? Characteristics of Report, steps to be followed for Report writing, Structure of Report, Importance of Report Writing. (8 hours)

Practical (oral): To make students practice how to write a report and then speak on the subject matter of the report. (2 hours)

Unit IV

Technical Proposal: What is Proposal ? Significance of proposal, format of proposal, characteristics of a good proposal. (8 hours)

Practical (oral): To make students practice writing a proposal. (2 hours)

Recommended Books:

1. Raman Meenakshi & Sharma Sangeeta – Technical Communication – Principles & Practices, - ONP, N. Delhi
2. Mohan K. & Sharma R – Business Correspondence & Report Writing – TMH N.Delhi.

NOTE:

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

* Latest editions of all the suggested books are recommended.

DATA STRUCTURE USING C LAB

Fourth Semester

Course Code: DCS 451

L	T	P	C
-	-	4	2

Write Program in C++ for the following:

1. Sorting programs: Bubble sort, Merge sort, Insertion sort, Selection sort, and Quick sort.
2. Searching programs: Linear Search, Binary Search.
3. Array implementation of Stack, Queue, Circular Queue, Linked List.
4. Implementation of Stack, Queue, Circular Queue.
5. Implementation of Binary tree.
6. Program for Tree Traversals (preorder, in order, post order).

Evaluation of Practical Examination:

Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a 5 point scale which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

Evaluation scheme:

PRACTICAL PERFORMANCE & VIVA DURING THE SEMESTER (40 MARKS)			VIVA (10 MARKS)	TOTAL INTERNAL (50 MARKS)
EXPERIMENT (25 MARKS)	ATTENDANCE (10 MARKS)	QUIZ (5 MARKS)		

External Evaluation (50 marks)

The evaluation would also be done by the external Examiner based on the experiment conducted during the examination.

DATA BASE MANAGEMENT SYSTEM LAB

Fourth Semester

Course Code: DCS 452

L	T	P	C
-	-	4	2

The program to be implemented using SQL:

1. Create Table, SQL for Insertion, Deletion, Update and Retrieval using aggregating functions.
2. Write Programs in PL/SQL, Understanding the concept of Cursors.
3. Write Program for Join, Union & intersection etc.
4. Creating Views, Writing Assertions, Triggers.
5. Creating Forms, Reports etc.
6. Writing codes for generating Read and Update operator in a transaction using different situations.
7. Implement the 2 PL concerning central algorithm.

Evaluation of Practical Examination:

Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a 5 point scale which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

Evaluation scheme:

PRACTICAL PERFORMANCE & VIVA DURING THE SEMESTER (40 MARKS)			VIVA (10 MARKS)	TOTAL INTERNAL (50 MARKS)
EXPERIMENT (25 MARKS)	ATTENDANCE (10 MARKS)	QUIZ (5 MARKS)		

External Evaluation (50 marks)

The evaluation would also be done by the external Examiner based on the experiment conducted during the examination.

COMPUTER ORGANIZATION LAB

Fourth Semester

Course Code: DCS 453

L	T	P	C
-	-	4	2

LIST OF PRACTICAL:

1. To identify various components, devices and sections of computer.
2. To Study the motherboards
3. To interconnect the system unit with the video monitor, mouse and key board and test the operation of the computer.
4. Identification of chipsets and functional aspects of different subsystems on each card
5. To connect various add on cards and I/O devices to a computer motherboard and test their working.
6. Study of the bus system and identifying various signal lines
7. To note the voltages and waveforms at various terminals in the I/O channel (Bus Slots)
8. Study of peripherals used, their speeds and capacities

Evaluation of Practical Examination:

Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a 5 point scale which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

Evaluation scheme:

PRACTICAL PERFORMANCE & VIVA DURING THE SEMESTER (40 MARKS)			VIVA (10 MARKS)	TOTAL INTERNAL (50 MARKS)
EXPERIMENT (25 MARKS)	ATTENDANCE (10 MARKS)	QUIZ (5 MARKS)		

External Evaluation (50 marks)

The evaluation would also be done by the external Examiner based on the experiment conducted during the examination.