

SACRED HEART COLLEGE (AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE

BACHELOR OF COMPUTER APPLICATIONS

[MOBILE APPLICATIONS AND CLOUD TECHNOLOGY]

Course plan

Academic Year 2016 - 17

Semester 2

Course Structure

Course Code	Title Of The Course	No. Hrs./Week	Credits	Total Hrs./Sem
U2CCENG2	Critical Thinking, Academic Writing & Presentation	5	4	90
U2CPCMT2	Discrete Mathematics and Numerical Analysis	4	4	72
U2CRBCA4	Operating system	4	3	72
U2CRBCA5	OOPS with C++	4	3	72
U2CRBCA6	Data structures using 'C'	4	3	72
U2ARESC1	Environmental Studies	5	4	75
U2PRBCA3	OOPS with C++ - Practical	2	1	36
U2PRBCA4	Data structures using 'C' - Practical	2	1	36

COURSE PLAN

PROGRAMME	BACHELOR OF COMPUTER APPLICATIONS	SEMESTER	2
COURSE CODE AND TITLE	U2CCENG2: CRITICAL THINKING, ACADEMIC WRITING & PRESENTATION	CREDIT	4
HOURS/WEEK	4	HOURS/SEM	90
FACULTY NAME	Bijo Mathew		

COURSE OBJECTIVES
To comprehend fundamental concepts of critical reasoning and develops the capacity to read and respond critically, drawing conclusions, generalizing, differentiating fact from opinion and creating their own arguments.
To develop appropriate and impressive writing styles for various contexts.
To write and correct structural imperfections and edit what they have written
To develops capacity for making academic presentations effectively and impressively.

Sessions	Topic	Method	Remarks
1 – 2	Introduction to Critical Thinking	Lecture	
3 – 4	Reasoning and Arguments	Discussion	
5 – 6	Deductive and Inductive Arguments	Lecture	
7 – 8	Fallacies	Lecture	
9 – 10	Inferential Comprehension	Reading Exercises	
11 – 12	Critical Thinking and Academic Writing	Lecture	
13 – 14	Critical Thinking and Academic Writing	Exercises	
15 – 16	Writing Models	Introductory Lecture	
17 – 18	Writing Letters	General Principles	
19 – 20	Writing a Letter to the Editor	Exercise - 1	
21 – 22	Letter to the Editor	Discussion on the Samples done	
23 – 24	Resume	General Guidelines	
25 – 26	Resume Writing	Writing Exercise	

27 – 28	Resume Writing	Discussion on the samples	
29 - 30	Covering Letter	General Introduction and Writing Exercise	
31 – 32	Covering Letter	Discussion on the samples	
33 – 34	Emails	General Instructions and Writing Exercise	
35 – 36	Emails	Discussion on the Samples	
37 – 38	Interview Skills	Discussion on the general principles	
39 – 40	Group Discussion	Practical sessions and Evaluation	
41 – 42	Accuracy in Academic writing	Lecture	
43 – 44	Articles and Determiners	Lecture and discussion	
45 – 46	Nouns and Pronouns	Lecture	
47 – 48	Subject-verb agreement	Lecture and discussion	
49 - 50	Phrasal verbs	Lecture	
51 – 52	Modals	Lecture	
53 – 54	Tenses	Lecture and demonstration	
55 – 56	Conditional clauses	General Instructions and Writing Exercise	
57 - 58	Relative Pronouns	Lecture and demonstration	
59 – 60	Passive Voices	Lecture and illustration	
61 – 62	Conjunctions	Lecture	
63 – 64	Embedded questions	Demonstration	
65 – 66	Punctuations and Abbreviations	General Instructions and Writing Exercise	
67 – 68	Soft skills for academic presentations	Presentation and lecture	
69 – 70	Effective communication skills	Lecture	
71 – 72	How to structure presentation	Lecture and Demonstration	
73 – 74	Flip Charts, OHP, Power point presentation	Demonstration	

75 – 76	Clarity and brevity in presentation	Lecture	
77 – 78	Interaction and persuasion	Lecture	
79 – 81	Interview skills	Face to face interaction, demonstration	
82 – 84	Group Discussion	Demonstration and Lecture	
85 – 87	Group Discussion	Demonstration and Lecture	
88 - 90	Revision	Discussion and revising the topics	

REFERENCE

- Marilyn Anderson, Pramod K Nayar and Madhucchandra Sen. Critical Thinking, Academic Writing and Presentation Skills. Pearson Education and Mahatma Gandhi University

COURSE PLAN

PROGRAMME	BACHELOR OF COMPUTER APPLICATIONS	SEMESTER	2
COURSE CODE AND TITLE	U2CPCMT2: DISCRETE MATHEMATICS AND NUMERICAL ANALYSIS	CREDIT	4
HOURS/WEEK	4	HOURS/SEM	72

COURSE OBJECTIVES
Apply the basic concepts in combinatorial graph theory in science, business and industry
Apply graph theoretical algorithms to solve problems in daily life.
Apply methods to solve system of equations.
Apply numerical methods for solving mathematical problems that arise in Science and Engineering
Appreciate the need of access control and protection in an operating system

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
MODULE I				
1	The theory of counting	PPT	video	
2	The multiplication rule	PPT/Lecture		
3	Ordered sample and permutations	PPT/Lecture		
4	ordered sample and permutations problems	PPT/Lecture	e-resource	
5	unordered samples without repetition	PPT/Lecture		
6	unordered samples without repetition problems	PPT/Lecture		
7	permutations involving indistinguishable objects	Lecture		
8	permutations involving indistinguishable objects problems	Lecture		
9	multinomial co-efficient	Lecture		
10	unordered samples with repetition	Lecture		
11	unordered samples with repetition problems	PPT/Lecture		
12	permutation involving indistinguishable objects	PPT/Lecture		
13	permutation involving indistinguishable objects problems	PPT/Lecture		
14	Revision			
MODULE II				
15	Leonhard Euler and the seven bridges of Konigsberg	PPT/Lecture		
16	trees and spanning trees	Lecture	video	
17	minimal spanning trees	Lecture		
18	minimal spanning trees problems	Lecture		

19	binary trees	Lecture	e-resource	
20	tree searching	PPT/Lecture		
21	Planar graphs	PPT/Lecture		
22	Euler"s theorem	PPT/Lecture		
23	Euler"s theorem problems	PPT/Lecture		
24	Problems on planar, euler graphs	Lecture		
25	Revision			
26	CIA I			
27	The shortest path problem	Lecture		
28	Dijkstras Algorithm	PPT/Lecture		
29	two "all-pairs" Algorithm	PPT/Lecture		
30	Floyd"s Algorithm and	PPT/Lecture		
31	Marshal"s Algorithm.	PPT/Lecture		
32	Revision			
MODULE III				
33	Fixed point iteration: $x=g(x)$ method	PPT/Lecture		
34	Fixed point iteration: $x=g(x)$ method problem	Lecture		
35	Fixed point iteration: $x=g(x)$ method problem	Lecture	video	
36	Newton"s method	Lecture		
37	Newton"s method problem	Lecture		
38	Newton"s method problem	PPT/Lecture	e-resource	
39	Solution of linear system by Gaussian elimination	PPT/Lecture		
40	Solution of linear system by Gaussian elimination problem	Lecture		
41	Solution of linear system by Gaussian elimination problem	Lecture		
42	Gauss-Jordon method –iterative method	Lecture		
43	Gauss-Jordon method problems	Lecture		
44	Gauss-Jordon method problems	Lecture		
45	Gauss-Seidel method	Lecture		
46	Gauss-Seidel method problems	Lecture		
47	Gauss-Seidel method problems	Lecture		
48	Inverse of a matrix by Gauss Jordon method.	Lecture		
49	Inverse of a matrix by Gauss Jordon method problems	Lecture		
50	Inverse of a matrix by Gauss Jordon method problems	Lecture		
51	Revision			
52	Revision			
MODULE IV				
53	Differentiation using interpolation formulae	Lecture		
54	Differentiation using interpolation formulae problems	Lecture		

55	Differentiation using interpolation formulae problems	Lecture		
56	Numerical integration by trapezoidal rule	Lecture		
57	Numerical integration by trapezoidal rule problems	Lecture	video	
58	Numerical integration by trapezoidal rule problems	Lecture		
59	Numerical integration by Simpson's 1/3 rule	Lecture		
60	Numerical integration by Simpson's 1/3 rule problems	Lecture	e-resource	
61	Numerical integration by Simpson's 1/3 rule problems	Lecture		
62	Numerical integration by Simpson's 3/8 rule	Lecture		
63	Numerical integration by Simpson's 3/8 rule problems	Lecture		
64	Numerical integration by Simpson's 3/8 rule problems	Lecture		
65	Single step methods: Taylor series method	Lecture		
66	Taylor series method problems	Lecture		
67	Taylor series method problems	PPT/Lecture		
68	Euler method for first order equation	PPT/Lecture		
69	Fourth order Runge–Kutta method for solving first and second order equations.	PPT/Lecture		
70	Revision			
71	Revision			
72	Revision			

INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	24/11/2016	Problems on the multiplication rule, unordered samples without repetition, permutations involving indistinguishable objects
2	15/12/2016	Problems on Dijkstras Algorithm, two “all-pairs” Algorithm, Floyd’s Algorithm and Marshal’s Algorithm
3	15/1/2017	Problems on Gauss-Seidel method, Gauss Jordan method, Gaussian elimination method
4	18/2/2017	Problems on trapezoidal, Simpson’s 1/3 and 3/8 rule, Taylor series method, Fourth order Runge–Kutta method

REFERENCES

- Engineering Mathematics, N.P. Bali, Manish Goyal
- Petergray – Logic, Algebra and databases (chapter 3), Affiliated East West press pvt Ltd.
- Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics (chapter 1,2 and 4) , Mc.Graw Hill

COURSE PLAN

PROGRAMME	BACHELOR OF COMPUTER APPLICATIONS	SEMESTER	2
COURSE CODE AND TITLE	U2CRBCA4: OPERATING SYSTEM	CREDIT	4
HOURS/WEEK	4	HOURS/SEM	72
FACULTY NAME	SANTHOSH KUMAR K P		

COURSE OBJECTIVES

Identify mechanism to handle processes, memory, I/O devices, and files and develop an appropriate algorithm for it.
Discuss issues of Process Management including process structure, synchronization, scheduling and communication.
Interpret the reasons for deadlock state, and the solution methods to handle it
Differentiate type of memory management techniques used by Operating Systems
Appreciate the need of access control and protection in an operating system

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
MODULE I				
1	Introduction to Operating System	PPT	video	
2	Objectives and Functions of OS	PPT/Lecture		
3	Objectives and Functions of OS	PPT/Lecture		
4	Objectives and Functions of OS	PPT/Lecture	e-resource	
5	Evolution of OS	PPT/Lecture		
6	Evolution of OS	PPT/Lecture		
7	OS Structures	Lecture		
8	OS Components	Lecture		
9	OS Services	Lecture		
10	OS Services	Lecture		
11	System calls	PPT/Lecture		
12	System programs	PPT/Lecture		
13	Virtual Machines	PPT/Lecture		
14	Revision			
MODULE II				
15	Concept of Process	PPT/Lecture		
16	Process scheduling	Lecture		
17	Co-operating processes, Operations on processes	Lecture		
18	Inter process communication	Lecture		
19	Communication in client-server systems	Lecture		

20	Introduction to Threads	PPT/Lecture		
21	Single and Multi-threaded processes and its benefits	PPT/Lecture		
22	User and Kernel threads	PPT/Lecture		
23	Multithreading models, Threading issues	PPT/Lecture		
24	Scheduling criteria, Scheduling Algorithms	Lecture		
25	Scheduling criteria, Scheduling Algorithms	Lecture		
26	CIA-1			
27	Multiple Processor Scheduling, Real-time Scheduling	Lecture		
28	Algorithm Evaluation, Process Scheduling Models	Lecture		
29	Mutual Exclusion, Critical – section problem, Synchronization hardware	PPT/Lecture		
30	Semaphores, Classic problems of synchronization	PPT/Lecture		
31	Critical Regions, Monitors, OS Synchronization, Atomic Transactions	PPT/Lecture		
32	Revision			
MODULE III				
33	Deadlocks: System Model, Deadlock characterization	PPT/Lecture		
34	Methods for handling Deadlocks	PPT/Lecture		
35	Deadlock prevention, Deadlock Avoidance	PPT/Lecture		
36	Deadlock Detection, Recovery from Deadlock	Lecture	Quiz	
37	Memory Management: Logical and physical Address Space	Lecture	Q & Ans Session	
38	Swapping	PPT/Lecture		
39	Contiguous Memory Allocation	PPT/Lecture		
40	Paging, Segmentation with Paging	PPT/Lecture		
41	Virtual Management: Demand paging, Process creation	PPT/Lecture		
42	Page Replacement Algorithms, Allocation of Frames	Lecture		
43	Thrashing	PPT/Lecture		
44	Operating System Examples, Page size and other considerations, Demand segmentation	PPT/Lecture		
45	File-System Interface: File concept, Access Methods, Directory structure	PPT/Lecture		
46	File- system Mounting, File sharing, Protection and consistency semantics	PPT/Lecture		
47	File-System Implementation: File-System structure	PPT/Lecture		
48	File-System Implementations	PPT/Lecture		
49	Directory Implementation,	PPT/Lecture		

50	Allocation Methods	PPT/Lecture		
51	Free-space Management, Efficiency and Performance, Recovery	PPT/Lecture		
52	Disk Management: Disk Structure, Disk Scheduling	PPT/Lecture	Video	
53	Disk Management, Swap-Space Management	PPT/Lecture		
54	Disk Attachment, stable-storage Implementation	PPT/Lecture		
55	Revision			
56	Protection: Goals of Protection	Lecture	Debate	
57	Domain of Protection	PPT/Lecture		
58	Access Matrix	PPT/Lecture		
59	Implementation of Access Matrix	PPT/Lecture		
60	Revocation of Access Rights	PPT/Lecture		
61	Capability- Based Systems	PPT/Lecture		
62	Language – Based Protection	PPT/Lecture		
CIA – II				
63	Security: Security Problem	Lecture	Demo video	
64	User Authentication	Lecture		
65	One – Time Password	Lecture	Group discussion	
66	Program Threats	Lecture		
67	System Threats	PPT/Lecture		
68	Cryptography	PPT/Lecture		
69	Computer – Security Classifications	PPT/Lecture		
70	Revision			
71	Revision			
72	Revision			

INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	4/1/2017	Process synchronization problems
2	28/1/2017	Memory management problems

GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	2/2/2017	OTP: security (Group Discussion)

REFERENCES

- Milan Milonkovic, Operating System Concepts and design, II Edition, McGraw Hill 1992.
- Tanenbaum, Operation System Concepts, 2nd Edition, Pearson Education.
- Silberschatz / Galvin / Gagne, Operating System,6th Edition,WSE (WILEY Publication)

Web resource references:

- https://en.wikipedia.org/wiki/Operating_system

COURSE PLAN

PROGRAMME	BACHELOR OF COMPUTER APPLICATIONS	SEMESTER	2
COURSE CODE AND TITLE	U2CRBCA5: OOPS WITH C++	CREDIT	3
HOURS/WEEK	4	HOURS/SEM	72
FACULTY NAME	CHRISTY JACQUELINE		

COURSE OBJECTIVES
Understand the basic concepts of OOPS.
Discuss real world problems and simulate using OOPS concepts.
Apply the concepts of Object oriented programming
Illustrate the process of data file manipulations using c++
Apply concepts of templates and exception handling

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
MODULE I				
1	Introduction to Programming concepts	PPT		
2	Comparison between Procedure versus Object oriented programming	PPT/Lecture		
3	Data types and its classification	PPT/Lecture		
4	Input and Output statements	PPT/Lecture		
5	Control statements	PPT/Lecture		
6	Decision and Looping statements	PPT/Lecture		
7	Introduction to Structures	Lecture		
8	Unions	Lecture		
9	Class	Lecture		
10	Access Specifier	Lecture		
11	Arrays, Class and Structures comparison	PPT/Lecture		
12	OOPS concepts	PPT/Lecture		
13	Class concept	PPT/Lecture	E-resource	
14	Enumerated data type and usage	PPT/Lecture		
MODULE II				
15	Class definition	PPT/Lecture		
16	Objects as function arguments	Lecture		
17	Returning objects from function	Lecture		
18	Scope resolution operator	Lecture		
19	Member function defined outside the class	Lecture		

20	Structure and class	PPT/Lecture		
21	Functions in c++	PPT/Lecture		
22	Built in functions	PPT/Lecture		
23	Call by value and call by reference	PPT/Lecture		
24	Overload function	Lecture		
25	Storage class	Lecture		
26	CIA-1			
27	Constructor	Lecture		
28	Types of constructor	Lecture		
29	Dynamic constructor	PPT/Lecture		
30	Constructor overloading	PPT/Lecture		
31	Copy constructor	PPT/Lecture		
32	Destructor, Manipulating private data members			
MODULE III				
33	Defining operator overloading	PPT/Lecture		
34	Overloading unary operator and binary operator	PPT/Lecture		
35	Manipulation of string using overloaded operator	PPT/Lecture		
36	Data conversion	Lecture	Quiz	
37	Conversion between basic types	Lecture		
38	Conversion between objects and basic types	PPT/Lecture		
39	Conversion between objects of different classes	PPT/Lecture		
40	Base class and derived class	PPT/Lecture		
41	Defining derived class	PPT/Lecture		
42	Protected, public and private inheritance	Lecture		
43	Constructors and destructors in derived class	PPT/Lecture		
44	Levels of inheritance	PPT/Lecture		
45	Single Inheritance	PPT/Lecture		
46	Multiple and Multilevel	PPT/Lecture	E-resource	
47	Hierarchical inheritance	PPT/Lecture		
48	Hybrid Inheritance	PPT/Lecture		
MODULE IV				
49	Pointers	PPT/Lecture		
50	Pointer declaration and access	Lecture		
51	Pointer to void and arrays	PPT/Lecture		
52	Pointer constant and constant pointer	PPT/Lecture	Video	
53	Pointers and functions	PPT/Lecture		
54	Pointer arrays	PPT/Lecture		
55	Arrays of pointer to string	Lecture		
56	Memory Management	Lecture	Quiz	
57	New and delete, pointer to object	PPT/Lecture		
58	Referencing members using pointers	PPT/Lecture		

59	Self containing class	PPT/Lecture		
60	This pointer concepts	PPT/Lecture		
61	Virtual Function concepts	PPT/Lecture		
62	Friend function and static function	PPT/Lecture		
CIA – II MODULE V				
63	Templates concepts	Lecture	Demo video	
64	Types of templates	Lecture		
65	Member function templates	Lecture	Quiz	
66	Template arguments	Lecture		
67	Exception handling	PPT/Lecture		
68	C++ stream and C++ stream classes	PPT/Lecture		
69	Unformatted I/O operators	PPT/Lecture		
70	Manipulators	Lecture		
71	Revision			
72	Revision			

INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

Sl.No	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	27/12/2016	Inheritance and types of inheritance
2	15/1/2017	Pointer Concepts

GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines

Sl.No	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	5/2/2017	Templates and Exception Handling

REFERENCES

- E. Balaguruswamy: Object Oriented Programming with C++, Tata McGraw Hill. Publications
- Strousstrup: The C++ Programming Language, Pearson Edition, 3rd Edition
- Lafore Robert: Object Oriented Programming in Turbo C++, Galgotia Publications
- Lippman: C++ Primer, 3/e Pearson Education
- C++ completer reference by Herbert Schildt, Tata McGraw Hill Publications.

Web resource references:

- <http://homepage.divms.uiowa.edu/~slonnegr/oosd/22Exceptions.pdf>

COURSE PLAN

PROGRAMME	BACHELOR OF COMPUTER APPLICATIONS	SEMESTER	2
COURSE CODE AND TITLE	U2CRBCA6: DATA STRUCTURES USING C	CREDIT	3
HOURS/WEEK	4	HOURS/SEM	72
FACULTY NAME	SHAILESH S		

COURSE OBJECTIVES
The concept of elementary data organization, Dynamic memory allocation, Pointer, recursion and string operation
Algorithm and its efficiency measure by means of asymptotic notation, analyze algorithms and its correctness.
Ability to understand different sorting algorithm.
Ability to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures- Stack, Queue, Linked List
Ability to have knowledge of tree and graphs concepts.

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
MODULE I				
1	Syllabus Discussion	PPT	Discussion	
2	Introduction and classification of data structure & Elementary data organization	PPT/Lecture		
3	Introduction to Algorithm & complexity	PPT/Lecture		
4	Complexity analysis of algorithm	PPT/Lecture		
5	Character array & String processing	PPT/Lecture		
6	String processing functions	PPT/Lecture		
7	Pointer, Accessing variable and structure pointer.	Lecture		
8	Memory allocation	Lecture		
9	Dynamic Memory Allocation functions	Lecture		
10	Concept of Recursion	Lecture		
11	Examples of Recursion	PPT/Lecture		
12	Revision			
13	Revision			
14	Revision			
MODULE II				
15	Introduction to Searching	PPT/Lecture		
16	Linear Search and analysing complexity	Lecture		
17	Binary Search	Lecture		

18	Binary Search complexity analysis	Lecture		
19	Introduction to Sorting Algorithms	Lecture		
20	Insertion sort algorithm & analysis	PPT/Lecture		
21	Insertion sort complexity analysis	PPT/Lecture		
22	Bubble sort algorithm	PPT/Lecture		
23	Bubble sort complexity analysis	PPT/Lecture		
24	Quick sort algorithm	Lecture		
25	Quick sort complexity analysis	Lecture		
26	CIA-1			
27	Selection Sort algorithm & analysis	Lecture		
28	Selection Sort complexity analysis	Lecture		
29	Merge Sort algorithm	PPT/Lecture		
30	Merge Sort complexity analysis	PPT/Lecture		
31	Summary of Module II	PPT/Lecture		
32	Revision			
MODULE III				
33	Introduction to Stack	PPT/Lecture		
34	Array representation of stack	PPT/Lecture		
35	Application of Stack	PPT/Lecture		
36	Infix to Post fix conversion & evaluation	Lecture		
37	Infix to Post fix conversion & evaluation (Implementation)	Lecture		
38	Queue definition and Application	PPT/Lecture		
39	Array representation	PPT/Lecture		
40	Types of queue	PPT/Lecture		
41	Operations on Queue	PPT/Lecture		
42	Operations on Queue	Lecture		
43	Summary of Module III	PPT/Lecture		
44	Revision	PPT/Lecture		
MODULE IV				
45	Link List	PPT/Lecture		
46	Types of Link List	PPT/Lecture	E-resource	
47	Application of Linked list	PPT/Lecture		
48	LL -advantage & disadvantage	PPT/Lecture		
49	Operation on singly link list	PPT/Lecture		
50	Operation on singly link list	Lecture		
51	Operation on doubly link list	PPT/Lecture		
52	Operation on doubly link list	PPT/Lecture	Video	
53	Operation on circular link list	PPT/Lecture		
54	Summary of Module IV	PPT/Lecture		
55	Revision	Lecture		
CIA MODULE V				

56	Tree definition and application	Lecture		
57	Different tree terminology	PPT/Lecture		
58	Binary tree & its type	PPT/Lecture		
59	Implementation of Binary tree	PPT/Lecture		
60	Binary Search Tree & its application	PPT/Lecture		
61	BST Traversal	PPT/Lecture		
62	Implementation of BST	PPT/Lecture		
63	Heap Tree	Lecture	Demo video	
64	Graph concept and application	Lecture		
65	Representation of graph	Lecture	Quiz	
66	Graph BFS Traversal	Lecture		
67	Implementation of BFS	PPT/Lecture		
68	Graph DFS Traversal	PPT/Lecture		
69	Implementation of DFS	PPT/Lecture		
70	Summary of Module V	Lecture		
71	Revision			
72	Revision			

INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

Sl.No	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	27/11/2016	Infix to Postfix conversions Problems
2	20/12/2016	Postfix evaluation problems
3	2/1/2017	Inorder, Preorder, Post order traversal problems
4	20/01/2017	DFS traversal problems
4	14/02/2017	BFS traversal Problems

GROUP ASSIGNMENTS/ACTIVITIES – Details & Guidelines

Sl.No	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	5/2/2017	Tree traversal problems

REFERENCES

- Yashwant Kanetka Let us C , 6th Edition, PBP Publication.
- Richie and Kenninghan, (2004), The C programming Language , BPB Publication.
- Balaguruswamy (2005), Programming in ANSI C, 3rd Edition, Tata McGraw Hill.