Lesson Plan

Teacher-in-Charge:Merly Thomas P

Class	***SE (Computer Engineering) Semester III***		
Academic term	***July-November 2019***		
Course	***Discrete Mathematics***		
Course Code	***CSC303***		
Periods (Hours) per week	***Lecture***	***03***	
	Tutorial	***01***	
Evaluation System		***Hours***	***Marks***
	Theory examination	3	80
	Internal Assessment	1+1	20
	Total	--	100

Time Table (Theory)	***Day***	***Time***
	Tuesday	**11.00-12.00 pm**
	Wednesday	**1.30 – 2.30 pm**
	Thursday	**8.45 –9.45 am**
	Tuesday (Tutorial)	**12.00-1.00 pm**

Course Content and Lesson plan: ***Discrete Mathematics (Theory)***

Module 1: ***Set Theory***

Lecture No.	**Date**		**Topic**	**Remarks(If any)**
	Planned	**Actual**		
1	01/07/19	01/07/19	Sets , Venn diagrams, Operations on sets	
2	02/07/19	03/07/19	Laws of set theory , Power set and products	Declared holiday
3	03/07/19	04/07/19	Cartesian Product, Partitions of sets	
4	04/07/19	05/07/19	The Principle of Inclusion-Exclusion	
5	08/07/19	08/07/19	Problems, Word problems on set theory	Chapter Revision

Module 2 : ***Logic and Propositions***				
Lecture No.	**Date**		**Topic**	**Remarks(If any)**
	Planned	**Actual**		
6	10/07/19		Propositions and logical operations	
7	15/07/19		Propositions and Truth tables	
8	16/07/19		Equivalence, Implications	
9	17/07/19		Laws of logic, Normal Forms	
10	18/07/19		Predicates and Quantifiers	
11	23/07/19		Mathematical Induction	Chapter Revision
				Assignment Submission

Module 3: Relations and Functions

Lecture No.	**Date**		**Topic**	**Remarks(If any)**
	Planned	**Actual**		
12	24/07/19		Relations, paths, digraphs	
13	25/07/19		Properties and types of binary relations	
14	26/07/19		Manipulation of relations, closures , Warshall's Algorithm	
15	30/07/19		Equivalence and Partial ordered relations	
16	31/07/19		Posets	
17	01/08/19		Hasse diagram	
18	06/08/19		Lattice, Types of Lattices	
19	06/08/19		Definition and types of functions : injective with example	
20	07/08/19		Definition and types of functions : surjective	
21	0808/19		Definition and types of functions : bijective	
	13/08/19 TO 16/08/19		**Unit Test I**	
22	20/08/19		Examples of different types of functions	
23	20/08/19		Composition, identity and inverse;	Tutorial

24	21/08/19		Pigeon-hole principle.	

Module 4: Counting

Lecture No.	Date		Topic	Remarks(If any)
	Planned	Actual		
24	22/08/19		Permutations , Combinations	
25	27/08/19		Elements of probability, Discrete Probability, Conditional Probability	
26	28/08/19		Series and Sequences	
27	29/08/19		Generating Functions & Recurrence Relations	
28	03/09/19		Recursive Functions	
29	04/09/19		Recursive Functions:- Applications of Recursive Relations e.g., Factorial, Binary Search, Quick Sort	
30	05/09/19		Introduction to Functional Programming	Revision

Module 5 : Graphs

Lecture No.	Date		Topic	Remarks(If any)
	Planned	Actual		
31	10/09/19		Paths and circuits : Eulerian, Hamiltonian	
32	10/09/19		Paths and circuits	Tutorial
33	11/09/19		Planer graphs and Graph coloring	
34	12/09/19		Isomorphism Of Graphs	
35	17/09/19		Sub Graphs And Sub Graphs Isomorphism	Revision

Module 6 : Algebraic Structures and Coding Theory

Lecture No.	Date		Topic	Remarks(If any)
	Planned	Actual		
36	18/09/19		Algebraic Structures With One Binary Operation - Semigroups	
37	19/09/19		Algebraic Structures With One Binary	

			Operation – Monoids, Groups	
38	24/09/19		Product and quotient of algebraic structures	
39	24/09/19		Isomorphism	Tutorial
40	25/09/19		Homomorphism	
41	26/09/19		Automorphism;	
42	01/10/19		Cyclic Groups	
43	01/10/19		Normal subgroup	Tutorial
44	02/10/19		Codes and group codes	
45	03/10/19		Problems on Coding Theory	Tutorial

Text Books:

1. BernadKolman, Robert Busby, Sharon Cutler Ross, Nadeem-ur-Rehman, "Discrete Mathematical Structures", Pearson Education.

2. C.L.Liu, Elements of Discrete Mathematics, second edition 1985, McGraw-Hill BookCompany. Reprinted 2000.

3. K.H.Rosen, Discrete Mathematics and applications, fifth edition 2003, TataMcGraw Hill publishing Company.

4. D.E. Rydeheard University of Manchester , R.M. Burstall, University of Edinburgh "Computational Category Theory"

Reference Books:

1. Y N Singh, "Discrete Mathematical Structures", Wiley-India.

2. J .L.Mott, A.Kandel, T.P .Baker, Discrete Mathematics for Computer Scientists and Mathematicians, second edition 1986, Prentice Hall of India.

3. J. P. Trembley, R. Manohar "Discrete Mathematical Structures with Applications to Computer Science", TataMcgraw-Hill.

4. Seymour Lipschutz , Marc Lars Lipson," Discrete Mathematics" Schaum"sOutline, McGraw Hill Education.

Reference Material

Discrete Mathematics Semester III **July – Dec 2019**

	Referred Books:			
Sr. No	**Name of the Book**	**Author/Publication**	**Chapters**	**Modules**
1.	Discrete Mathematical Structures	Bernad Kolman, Robert Busby, Sharon Cutler Ross Pearson Education	**Ch 1**	**I**
			Ch 3	**II**
			Ch 4	**III**
			Ch 5	**IV**
			Ch 6	**V**
			Ch 7,8	**VI**
2.	Elements of Discrete Mathematics	C.L.Liu McGraw-Hill Book Company. Reprinted 2000	**Ch 1.5, 4.2**	**I**
			Ch 2.4	**II**
			Ch 2.5	**III**
			Ch 3	**IV**
			Ch 4.1	**V**
			Ch 5	**VI**
3.	Discrete Mathematics and applications	K.H.Rosen Tata McGraw-Hill publishing Company.		
4.			**Ch 2**	**I**
			Ch 4	**VI**
			Ch 12	**VII**
			Ch 13	**VIII**
5.			**Ch 2,3,7**	**V**
			Ch 9	**VII**
			Ch 10	**IV**
6.				

Evaluation Guidelines : (University)

Term Work:

Term work shall consist of minimum 12 experiments.
Journal must include at least 2 assignments.
The final certification and acceptance of term work ensures that satisfactory performance of laboratory work and minimum passing marks in term work.
The distribution of marks for term work shall be as follows:

· Experiments: ……..…… …(15) Marks.
· Assignments:…….. (05) Marks.
· Attendance …… ……. (05) Marks
TOTAL: ……. (25) Marks.

The final certification and acceptance of TW ensures the satisfactory Performance of laboratory Work and Minimum Passing in the term work.

Semester End Theory Examination:

1. Question paper will comprise of total 7 questions, each of 20 marks.
2. Only 5 questions need to be solved.
3. Question number 1 will be compulsory and will cover all modules.
4. Remaining questions will be mixed in nature. (e.g.- suppose Q.2 has part (a) from, module 3 then part (b) will be from any module other than module 3.)
5. In question paper weightage of each module will be proportional to number of respective lecture hours as mentioned in the syllabus.
6. No question should be asked from pre-requisite module.

Course Outcomes for Discrete Structures

Upon completion of this course students will be able to:	
CSC303.1	Demonstrate the ability to apply various operations of set theory for problem solving **(B2 -Comprehensive)**
CSC303.2	Illustrate the **a**bility to reason logically and obtain proofs by mathematical induction **(B3-Apply)**
CSC303.3	Illustrate the concepts of Functions, Relations and Graphs And apply them in Functional Programming. **(B2 -Comprehensive)**
CSC303.4	Apply counting techniques in computing problems.**(B3 - Apply)**
CSC303.5	Use groups and codes in encoding and decoding techniques. **(B3-Apply)**
CSC303.6	Relate discrete structures into other computing problems such as Artificial Intelligence, Cryptography, Data Analysis And Data Mining

Relevance Mapping of Course Outcomes to POs

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CSC303.1	3											
CSC303.2	3	**1**										
CSC303.3	3											
CSC303.4	3	**2**										
CSC303.5	3	**2**										
CSC303.6	2											**2**
CSC303.1	**3**	**2**										**2**