MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

COURSE PLAN

Department	:	MATHEMATICS
Course Name & code	:	ENGINEERING MATHEMATICS III & MAT 2155
Semester & branch	:	III SEMESTER & CSE/ICT/CC
Name of the faculty	:	Enter name of the faculty.
No of contact hours/week:		L: 2, T: 1, P: 0, C: 3

ASSESSMENT PLAN

Course Outcomes (COs)

	At the end of this course, the student should be able to:	No. of Contact Hours	Marks
CO1:	Understand concepts fo combinatorics and apply them.	8	10
CO2:	Understand concepts in Bodean Algebra and apply them to Bodean functions.	8	10
CO3:	Understand concepts of graph theory and their applications.	8	10
CO4:	Understand concepts of group theory and apply them.	10	12
CO5:	Understand concepts of propositional and predicate calculus.	6	08
	Total		

Components	Quizzes	Sessional Tests	End Semester/ Make-up Examination
Duration	20 to 30 minutes	60 minutes	180 minutes
Weightage	20 % (4 X 5 marks)	30 % (2 X 15 Marks)	50 % (1 X 50 Marks)
Typology of Questions	Understanding/Comprehension; Application; Analysis; Synthesis; Evaluation	Knowledge/Recall; Understanding/ Comprehension; Application	Understanding/ Comprehension; Application; Analysis; Synthesis; Evaluation
Pattern	Answer one randomly selected question from the problem sheet (Students can refer their class notes)	MCQ: 10 questions (0.5 marks) Short Answers: 5 questions (2 marks)	Answer all 5 full questions of 10 marks each. Each question may have 2 to 3 parts of 3/4/5/6/7 marks
Schedule	4, 7, 10, and 13th week of academic calendar	Calendared activity	Calendared activity
Topics Covered	Quiz 1 (L 1-9 & T 1-3) (CO1-2)	Test 1 (L 1-16 & T 1-5) (CO1-2)	Comprehensive examination covering full syllabus. Students are expected to answer all questions (CO1-5)
	Quiz 2 (L 10-18 & T 4-6) (CO2-3)		
	Quiz 3 (L 19-27 & T 7-10) (CO3-4)	Test 2 (L 17-34 & T 6-11) (CO3-4)	
	Quiz 4 (L 28-36 & T_{y7-y8}) (CO4-5)		

Course Plan

L. No./ T. No.	Topics	Course Outcome Addressed
L0	Introduction to the course	CO1-CO5
L1	Permutations and Combinations: With and without repetition, identical objects, examples	CO1
L2	Distributions, Problems on permutations and combinations	CO1
L3	Tutorial	CO1
L4	Principle of Inclusion and Exclusion (statement only), problems, derangement	CO1
L5	Partitions and Compositions, Ferrers Graph, Generating Functions	CO1
L6	Tutorial	CO1
L7	Ordering of permutations – Lexicographical and reverse Lexicographical, Fike's ordering of permutations	CO1
L8	Relations on a set and types of relations	CO2
L9	Tutorial	CO2
L 10	Partial Ordering Relations and Posets, Chains and anti-Chains	CO2
L 11	Bounds, Lattices and examples	CO2
L12	Tutorial	CO2

L 13	Basic properties of algebraic systems defined by lattices	CO2
L 14	Distributive Lattices and Complemented Lattices	CO2
L 15	Tutorial	CO2
L 16	Boolean Lattices and Boolean Algebra	CO2
L 17	Graphs – Basic definitions, Basic properties and problems, Isomorphism and self-complementary graphs, problems	CO3
L 18	Tutorial	CO3
L 19	Connectedness of a graph, Eulerian and Hamiltorian graphs, Center, radius, diameter of a graph	CO3
L 20	Trees and Properties	CO3
L 21	Tutorial	CO3
L 22	Matrices related to graphs	CO3
L 23	Dijkstra's algorithm for finding the shortest path	CO3
L 24	Tutorial	CO3
L 25	Semi-groups, Monoids and Groups – Definitions and examples	CO4
L 26	Elementary properties of groups and problems	CO4
L 27	Tutorial	CO4
L 28	Subgroups and related problems	CO4
L 29	Cosets of a group and related problems	CO4
L 30	Tutorial	CO4
L 31	Lagrange's Theorem and related problems, Cyclic groups and proerties	CO4
L 32	Normal subgroups and properties	CO4
L 33	Tutorial	CO4
L 34	Codes and Group codes	CO4
L 35	Propositional calculus – Basic definitions, Connectives Well-formed formulas and tautologies	CO5
L 36	Tutorial	CO5
L 37	Equivalence formulas and tautological implications, inference theory of propositional calculus	CO5
L 38	Predicate calculus – Basic denfifitions, quantifications	CO5
L 39	Tutorial	CO5
L 40	Inference theory of Predicated calculus	CO5

References:

1.	C.L.Liu, Elements of Discrete Mathematics, Mc Graw Hill, 1986
2.	J.P.Trembaly and R. Manohar, Discrete Mathematics Structures with application to computer science, Mc Graw Hill, 1987.
3.	E.S.Page and L.B.Wilson, An introduction to computational combinations, Cambridge Uni. Press. 1979
4.	Narasingh Deo, Graph theory with Application to computer science, PHI, 1987.
5.	F. Harary, Graph Theory, Arosa Publishing House, New Delhi, second edition, 1990
6.	Alan Tucker, Applied Combinatorics, John Wiley and sons, Inc. 1996.
7.	Click or tap here to enter text.

Submitted by: Mrs. Kavitha Koppula

(Signature of the faculty)

Date: 19-07-2019

Approved by: Dr. Sudhakara G

(Signature of HOD)

Date: 19-07-2019

FACULTY MEMBERS TEACHING THE COURSE (IF MULTIPLE SECTIONS EXIST):

FACULTY	SECTION	FACULTY	SECTION
VM	CSE(A)	KAB	CC(A)
SNU	CSE(B)	SHK	CC(B)
DS	CSE(C)	VM	ICT(A)
ABB	CSE(D)	KK	ICT(B)
