

MOHAMMED SATHAK A J COLLEGE OF ENGINEERING

Siruseri IT park, OMR, Chennai - 603103

LESSON PLAN							
Department of <u>INFORMATION TECHNOLOGY</u>							
Name of the Subject	PROBABILITY AND STATISTICS			Name of the handling Faculty	S.SUDHA		
Subject Code	MA8391			Year / Sem	II/IV		
Acad Year	2018-2019			Batch	2018-2021		
Course Objective							
Apply the statistical tools in engineering problems.							
To indicate the basic concepts of probability and random variables.							
To interpret the basic concepts of two dimensional random variables.							
To acquaint the knowledge of testing of hypothesis for small and large samples which plays an important role in real life problems.							
To understand the significance of advanced queueing models..							
Course Outcome							
To extend the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.							
Associate the basic concepts of one and two dimensional random variables and apply in engineering applications.							
Apply the concept of testing of hypothesis for small and large samples in real life problems.							
Apply the basic concepts of classifications of design of experiments in the field of agriculture and statistical quality control.							
Examine the notion of sampling distributions and statistical techniques used in engineering and management problems.							
Lesson Plan							
Sl. No.	Topic(s)	T / R*	Periods Required	Mode of Teaching (BB / PPT / NPTEL / MOOC / etc)	Blooms Level (L1-L6)	CO	PO
		Book					
UNIT I PROBABILITY AND RANDOM VARIABLES							
1	Introduction to Random variables.	T1	1	PPT/BB	L1	CO1	PO1,PO3
2	Probability – Axioms of probability	T1	1	PPT/BB	L2	CO1	PO1,PO3

3	Conditional probability	T1	1	PPT/BB	L2	CO1	PO1,PO3
4	Predicates and quantifiers	T1	1	PPT/BB	L2	CO1	PO1,PO3
5	Baye's theorem	T1	1	PPT/BB	L1	CO1	PO1,PO3
6	Discrete random variables-Problems	T1	1	PPT/BB	L3	CO1	PO1,PO3
7	Continuous random variables-Problems	T1	1	PPT/BB	L2	CO1	PO1,PO3
8	Moments	T1	1	PPT/BB	L3	CO1	PO1,PO3
9	Binomial Distribution.	T1	1	PPT/BB	L3	CO1	PO1,PO3
10	Poisson Distribution.	R1	1	PPT/BB	L3	CO1	PO1,PO3
11	Geometric Distribution & Uniform Distribution.	R1	1	PPT/BB	L3	CO1	PO1,PO3
12	Exponential Distribution & Normal distribution	R1	1	PPT/BB	L3	CO1	PO1,PO3
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any							
Evaluation method :Assignment -1 given on Normal distribution							
UNIT II DIMENSIONAL RANDOM VARIABLES							
13	Introduction - Joint distributions.	T1	1	PPT/BB	L1	CO2	PO1,PO2, PO3
14	Marginal distributions.	T1	1	PPT/BB	L2	CO2	PO1,PO2, PO3
15	Conditional distributions.	T1	1	PPT/BB	L2	CO2	PO1,PO2, PO3
16	Covariance.	T1	1	PPT/BB	L2	CO2	PO1,PO2, PO3
17	Properties, Problems on Correlation	T1	1	PPT/BB	L2	CO2	PO1,PO2, PO3
18	Regression – properties.	T1	1	PPT/BB	L2	CO2	PO1,PO2, PO3
19	Problems on regression.	T1	1	PPT/BB	L3	CO2	PO1,PO2, PO3
20	Problems on regression.	T1	1	PPT/BB	L3	CO2	PO1,PO2, PO3
21	Problems on Transformation of random variables	T1	1	PPT/BB	L2	CO2	PO1,PO2, PO3
22	Problems on Transformation of random variables	R2	1	PPT/BB	L3	CO2	PO1,PO2, PO3

23	Central Limit Theorem	R2	1	PPT/BB	L3	CO2	PO1,PO2, PO3
24	Problems based on the Central limit theorem.	R2	1	PPT/BB	L3	CO2	PO1,PO2, PO3
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any							
Evaluation method :Assignment -2 given on Central Limit theorem							
UNIT III TESTING OF HYPOTHESIS							
25	Sampling distributions	T1	1	PPT/BB	L1	CO3	PO1,PO2
26	Estimation of parameters	T1	1	PPT/BB	L2	CO3	PO1,PO2
27	Statistical hypothesis	T1	1	PPT/BB	L2	CO3	PO1,PO2
28	Large sample tests based on Normal distribution for single mean.	T1	1	PPT/BB	L3	CO3	PO1,PO2
29	Large sample tests based on Normal distribution for single mean and difference of means	T1	1	PPT/BB	L3	CO3	PO1,PO2
30	Tests based on t	T1	1	PPT/BB	L3	CO3	PO1,PO2
31	Chi-square and F distributions for mean.	T1	1	PPT/BB	L3	CO3	PO1,PO2
32	Chi-square and F distributions for Variance	T1	1	PPT/BB	L3	CO3	PO1,PO2
33	Chi-square and F distributions for propotion	R1	1	PPT/BB	L3	CO3	PO1,PO2
34	Chi-square and F distributions for propotion	R1	1	PPT/BB	L3	CO3	PO1,PO2
35	Contingency table	R1	1	PPT/BB	L3	CO3	PO1,PO2
36	Goodness of fit.	R1	1	PPT/BB	L3	CO3	PO1,PO2
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any							
Evaluation method :Assignment -3 given on Small sample with Large sample							

UNIT IV DESIGN OF EXPERIMENTS							
37	Introduction to Design of Experiments	T1	1	PPT/BB	L1	CO4	PO1
38	One way classifications	T1	1	PPT/BB	L3	CO4	PO1
39	One way classifications	T1	1	PPT/BB	L3	CO4	PO1
40	Two way classifications	T1	1	PPT/BB	L3	CO4	PO1
41	Two way classifications	T1	1	PPT/BB	L3	CO4	PO1
42	Completely randomized design	T1	1	PPT/BB	L3	CO4	PO1
43	Completely randomized design	T1	1	PPT/BB	L3	CO4	PO1
44	Randomized block design	T1	1	PPT/BB	L3	CO4	PO1
45	Randomized block design	T1	1	PPT/BB	L3	CO4	PO1
46	Latin square design	R2	1	PPT/BB	L3	CO4	PO1
47	Latin square design	R2	1	PPT/BB	L3	CO4	PO1
48	2 ² factorial design	R2	1	PPT/BB	L3	CO4	PO1
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any:Assignment -4 given on 2 ² factorail design							
Evaluation method :							
UNIT V ADVANCED QUEUEING MODELS							
49	Introduction-Finite source models	T1	1	PPT/BB	L1	CO5	PO1,PO3
50	M/G/1 queue	T1	1	PPT/BB	L2	CO5	PO1,PO3
51	Pollaczek- Khintchine formula	T1	1	PPT/BB	L3	CO5	PO1,PO3
52	Pollaczek- Khintchine formula-Problems	T1	1	PPT/BB	L3	CO5	PO1,PO3
53	Problems on M/G/1 queue	T1	1	PPT/BB	L3	CO5	PO1,PO3
54	M/D/1 and M/EK/1 as special cases	T1	1	PPT/BB	L3	CO5	PO1,PO3
55	M/D/1 and M/EK/1 as special cases	T1	1	PPT/BB	L3	CO5	PO1,PO3
56	Series queues	T1	1	PPT/BB	L3	CO5	PO1,PO3
57	Series queues-Problems	T1	1	PPT/BB	L3	CO5	PO1,PO3
58	Series queues with blocking-Problems	R1	1	PPT/BB	L3	CO5	PO1,PO3
59	Open Jackson networks	R1	1	PPT/BB	L3	CO5	PO1,PO3
60	Open Jackson networks -Problemes	R1	1	PPT/BB	L3	CO5	PO1,PO3

Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any												
Evaluation method :Assignment -5 given compare these topics with real time applications												
Content Beyond the Syllabus Planned												
1	Go to nearest village collect the required data frame the problem use F-distribution and solve it.											
2												
Text Books												
1	Johnson, R.A., Miller, I and Freund J., "Miller and Freund’s Probability and Statistics for Engineers", Pearson Education, Asia, 8th Edition, 2015.											
2	Milton. J. S. and Arnold. J.C., "Introduction to Probability and Statistics", Tata McGraw Hill, 4th Edition, 2007.											
Reference Books												
1	Devore. J.L., "Probability and Statistics for Engineering and the Sciences", Cengage Learning, New Delhi, 8th Edition, 2014											
2	Papoulis, A. and Unnikrishnapillai, S., "Probability, Random Variables and Stochastic Processes", McGraw Hill Education India, 4th Edition, New Delhi, 2010.											
3	Ross, S.M., "Introduction to Probability and Statistics for Engineers and Scientists", 3rd Edition, Elsevier, 2004											
4	Spiegel. M.R., Schiller. J. and Srinivasan, R.A., "Schaum’s Outline of Theory and Problems of Probability and Statistics", Tata McGraw Hill Edition, 2004.											
5	Walpole. R.E., Myers. R.H., Myers. S.L. and Ye. K., "Probability and Statistics for Engineers and Scientists", Pearson Education, Asia, 8th Edition, 2007.											
Website / URL References												
1	https://onlinecourses.nptel.ac.in											
2												
3												
Blooms Level												
Level 1 (L1) : Remembering Level 2 (L2) : Understanding Level 3 (L3) : Applying			Lo wer Ord er Thi	Fixed Hour Exams	Level 4 (L4) : Analysing				Higher Order Thinki ng	Projects / Mini Projects		
Level 5 (L5) : Evaluating												
Level 6 (L6) : Creating												
Mapping syllabus with Bloom’s Taxonomy LOT and HOT												
Unit No	Unit Name			L1	L2	L3	L4	L5	L6	LOT	HOT	Total
Unit 1	PROBABILITY AND RANDOM VARIABLES			2	4	6	0	0	0	12	0	12

Unit 2	DIMENSIONAL RANDOM VARIABLES					2	3	7	0	0	0	12	0	12
Unit 3	TESTING OF HYPOTHESIS					1	2	9	0	0	0	12	0	12
Unit 4	DESIGN OF EXPERIMENTS					1	0	11	0	0	0	12	0	12
Unit 5	ADVANCED QUEUEING MODELS					1	1	10	0	0	0	12	0	12
Total						7	10	43	0	0	0	60	0	60
Total Percentage						11.667	17	71.67	0	0	0	100	0	100
CO PO Mapping														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	-	-	-	-	-	-	-	-	-	0	-
CO2	3	3	3	-	-	-	-	-	-	-	-	-	0	-
CO3	3	3	3	-	-	-	-	-	-	-	-	-	0	-
CO4	3	3	3	-	-	-	-	-	-	-	-	-	0	-
CO5	3	3	3	-	-	-	-	-	-	-	-	-	0	-
Avg	3	3	3	-	-	-	-	-	-	-	-	-	0	-
Justification for CO-PO mapping														
CO1	Discuss the fundamental probability concepts and random variables.													
CO2	Relate the concepts of Standard distributions which can describe real life phenomena.													
CO3	Analyze a highly utilized technique.													
CO4	Develop the experiments by hypothesis & Relate the Concept of Statistical Control System in Real life Situations.													
CO5	Solve the distributions and Statistical Concepts in Real life problems													
3		High level			2		Moderate level			1		Low level		
Name & Sign of Faculty Incharge : S.SUDHA														
Name & Sign of Subject Expert :														
Head of the Department :														

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