SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

1

Department of Applied Mathematics	LP: OM18001
B.E/B.Tech: UG	Rev. No: 0
Regulation: 2018	Date: 25/07/2022
Sub. Code / Sub. Name : OM18001 **STATISTICAL METHODS FOR ENGINEERS**	
Unit : 1	

Unit syllabus: DESCRIPTIVE STATISTICS

Introduction and Applications of Statistics-Measures of central tendency-Mean, Mode and Median, Quartiles, Standard deviation, Moments, Skewness and Kurtosis, Coefficient of variation and its applications.

Objective: At the end of the unit, the students would have a fundamental knowledge of the Concept of application of statistics. Have a well knowledge of mean, median Standard deviation ,moments and mode which can describe real life phenomena.

Session No	Topics to be covered	Ref	Teaching Aids
1.	Introduction to unit I. Mean, Median and mode	T.Veerarajan Pg-2.1 , 2.2	
2.	Quartiles, Standard deviation	Pg-2.3	
3.	Moments	Pg-4.48-4.54	
4.	.Skewness	Pg-5.2	
5.	Problems solved	Pg.5.21	BB/PPT
6.	Tutorial class		
7.	Kurtosis, problem solved	Pg-5.4	
8.	Coefficient of variation and its application	Pg.5.23	
9.	Problem solved	Pg-5.8	
Content beyond syllabus covered (if any):Elementary statistical theory			

* Session duration: 50 minutes

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: OM18001 **STATISTICAL METHODS FOR ENGINEERS**

Unit : II

Unit syllabus: TESTING OF HYPOTHESIS-LARGE SAMPLES
. Sampling distributions – Estimation of parameters – Statistical hypothesis – Large sample test based on Normal distribution for single mean, difference of means. Single proportions and difference of proportions.

Objective: At the end of the unit, the students would acquire skills in handling situations involving Managerial problems especially in quality control problems.

Session No	Topics to be covered	Ref	Teaching Aids
10	Introduction to sampling distribution.	T.Veerarajan Pg-2.24	
11	Estimation of parameters	Pg.2.32	
12	Testing of hypothesis for single mean	Pg-2.25	
13	Testing of hypothesis for difference of means	Pg.2.34-2.35	
14	Testing of hypothesis for mean and differences using Normal Distribution.	Pg-4.18	
15	Testing of hypothesis for single proportion	Pg-4.18-4.19	BB/PPT
16	Testing of hypothesis for difference of proportions	Pg-4.35	
17	Testing of hypothesis for proportion and differences using Normal Distribution.	Pg-4.73	
18	Summarizing the unit.	Pg-4.74-4.75	

Content beyond syllabus covered (if any): Managerial problems are through the concept of testing of hypothesis

* **Session duration: 50 minutes**

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: OM18001 STATISTICAL METHODS FOR ENGINEERS

Unit : III

Unit syllabus: TESTING OF HYPOTHESIS – SMALL SAMPLES

Tests based on t, chi-square and F distributions for mean, variance and proportion – Contingency table (test for independent) – Goodness of fit.

Objective: Understand and characterize phenomena about variance and proportion and Goodness of fit.

Session No	Topics to be covered	Ref	Teaching Aids
19	Testing of hypothesis for single mean using t-test.	T.Veerarajan Pg-6.2	
20	Testing of hypothesis for difference of means using t-test.	Pg-6.3	
21	Testing of hypothesis for mean and differences using Normal Distribution.	Pg-6.3	
22	Problems based on F-test	Pg-6.4	
23	F-test between variances.	Pg.6.2-6.4	BB/PPT
24	Testing of hypothesis for mean, variance using Chi-square distribution.	Pg-6.8	
25	Chi-square Test for independence of attributes.	Pg-6.8	
26	Chi-square Test for goodness of fit.	Pg-6-8	
27	Summarizing the unit.	Pg.7.57	
Content beyond syllabus covered (if any):			

* Session duration: 50 minutes

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY   Page 4 of 6

Sub. Code / Sub. Name: OM18001 STATISTICAL METHODS FOR ENGINEERS

Unit : IV

Unit syllabus: DESIGN OF EXPERIMENTS

One way and two way classifications – completely randomized design- Randomized block design-Latin square design..

Objective: Students would be exposed to statistical methods designed to contribute to the process of making scientific judgments in the face of uncertainty and variation.

Session No	Topics to be covered	Ref	Teaching Aids
28	Introduction—Unit syllabus.	T.Veerarajan Pg-769	
29	One way classification.	Pg.772	
30	Problems.	Pg-782	
31	Two-way classification.	Pg.776	
32	Problems.	Pg-781	BB/PPT
33	Completely randomized design.	Pg.783	
34	problems	T.Veerarajan pg-789	
35	Randomized block design.	Pg791	
36	Latin square design	Pg-795-799	
Content beyond syllabus covered (if any):			

* Session duration: 50 minutes

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: OM18001 STATISTICAL METHODS FOR ENGINEERS

Unit : V

Unit syllabus: STATISTICAL QUALITY CONTROL
Control charts for measurements (X bar and R charts) – Control charts for attributes (p, c and np charts) – Tolerance limits.

Objective: To enable the students to know the concepts of statistical Quality control theory and their applications on real time problems.

Session No	Topics to be covered	Ref	Teaching Aids
38	Introduction: Control charts for measurements X bar charts.	Pg-273	BB/PPT
39	Problems based on X-bar chart.	Pg-274	
40	Control charts for attributes – R chart.	Pg-270	
41	Problems based on R-chart	Pg 275	
42	Control charts for attributes –p,c charts.	Pg-278	
43	.Problems based on –p,c chart	Pg-279	
44	Control charts for attributes- np charts.	Pg-286	
45	Tolerance limits	Pg-287	

Content beyond syllabus covered (if any):

* Session duration: 50 minutes

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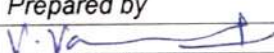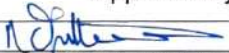
COURSE DELIVERY PLAN - THEORY

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TEXT BOOKS:

1. J. Susan Milton and Jesse C. Arnold, "Introduction to Probability and Statistics", Tata McGraw-Hill, 4th edition, 2007.
2. Richard A. Johnson, "Miller and Freund's Probability and Statistics for Engineers", Pearson Education, 6th edition, 2004.
3. S. C. Gupta and V. K. Kapoor, "Fundamentals of Mathematical Statistics", Sultan Chand, 11th edition, 2005.

REFERENCES:

1. J. Medhi, "Statistical Methods- An Introductory Text", New Age International, 1992.
2. Irwin Miller and Marylees Miller, "John E. Freund's Mathematical Statistics with Applications", Pearson Education, 7th edition, 2004.
3. Sheldon M. Ross, "Introduction to Probability and Statistics for Engineers and Scientists", Academic Press, 3rd edition, 2005.
4. T Veerarajan, "Fundamentals of Mathematical Statistics",YesDee publishing Pvt Ltd, 2017.

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Date	25/07/2022	25/07/2022
Remarks *: The same Lesson Plan may be used for OM18001 STATISTICAL METHODS FOR ENGINEERS in the subsequent semester.		
Remarks *:		