

GUJARAT TECHNOLOGICAL UNIVERSITY

COURSE NAME : STATISTICAL QUALITY CONTROL IN TEXTILE

1. RATIONALE :

With the fast developing technology the basic needs of industries from technicians are also changing. More & more highly skilled persons are required by the industries.

This course provides knowledge regarding concept of statistics, theoretical distribution, statistical test & control charts.

2. SCHEME OF TEACHING :

TOPIC NO.	NAME OF TOPIC	NO.OF HOURS		
		LECT	PRACT	TOTAL
1.	Introduction to S.Q.C. in textile	4	--	4
2.	Basic statistical concept	16	--	16
3.	Theoretical Distribution	6	--	6
4.	Statistical test	6	--	6
5.	Control charts	8	--	8
6.	International system of units	2	--	2
	TOTAL	42	--	42

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3. TECHNOLOGY RELATED SKILLS AND ENABILITY OBJECTIVES

TRS. EO'S	1. Understand the statistical concept	(Topic:1,2)
	1.1 Understand concept of variation	
	1.2 Prepare frequency distribution from the given data.	
	1.3 Prepare graphical charts for F.D.	
	1.4 Calculate measures of central tendency mean, mode, median, quartile	
	1.5 Calculate measures of dispersion Mean deviation, standard deviation. c.v. %, Variance	
	1.6 Establish correlation between two given variables.	
TRS. EO'S	2. Apply Theoretical distribution	(Topic:3)
	2.1 Apply binomial distribution for working out probability for event	
	2.2 Apply poisson distribution	
	2.3 Apply normal distribution	
TRS. EO's	3. Apply Test of significance	(Topic:4)
	3.1 Apply t test & judge the hypothesis	
	3.2 Apply f test & judge the hypothesis	
	3.3 Apply χ^2 (chi-square) test & judge the hypothesis	
TRS. EO's	4. Interpret statistical quality control chart	(Topic:5)
	4.1 Plot \bar{X} chart & R chart & interpret the charts.	
	4.2 Plot P chart & interpret charts.	
	4.3 Plot C chart & interpret charts.	
TRS. EO's	5. Know international system units, recommended by BIS for textile.	(Topic:6)
	5.1 Write international systems of units for textile.	
	5.2 Enlist important BIS units for textile.	

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4. COMMUNICATION SKILLS

1. Write reports on experiment conducted in laboratory / workshop.
2. Fill up various types of form / formats & maintain record.
3. Compile & interpret process data periodically.

5. TOPIC AND SUB TOPIC

TOPIC 1. Introduction of statistical control in textile.

TOPIC 2. Basic statistical concept

- 2.1 Concept of variation
- 2.2 Frequency distribution
- 2.3 Graphical representation of frequency distribution
- 2.4 Measures of central tendency
- 2.5 Measures of Dispersion
- 2.6 Co-rrrelation

TOPIC 3. Theoretical distribution :

- 3.1 Detail study of Binomial distribution,
- 3.2 Detail study of poisson distribution
- 3.3 Detail study of normal distribution.

TOPIC 4. Statistical test.

- 4.1 T test
- 4.2 F test
- 4.3 X^2 test (chi -square test)

TOPIC 5. Control charts

- 5.1 \bar{X} chart
- 5.2 R chart
- 5.3 \bar{p} chart
- 5.4 C chart
- 5.5 Interpretation of above mentioned charts.

TOPIC 6. International system of units (S. I .Units)

- 6.1 Recommended B. I. S. Units for textile.

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6. SUGGESTIVE INSTRUCTIONAL STRATEGIES

Sr. No.	TRS. No.	EO's	Instructional Strategies	Key Resources needed
1	1	1.1	Discussion	---
2	1	1.2	Tutorial	---
3	1	1.3	Tutorial	---
4	1	1.4	Tutorial	---
5	1	1.5	Tutorial	---
6	1	1.6	Tutorial	---
7	2	2.1	Discussion & Tutorial	---
8	2	2.2	Tutorial	---
9	2	2.3	Tutorial	---
10	3	3.1	Discussion & Tutorial	---
11	3	3.2	Discussion & Tutorial	---
12	3	3.3	Discussion & Tutorial	---
13	4	4.1	Discussion & Tutorial	---
14	4	4.2	Discussion & Tutorial	---
15	4	4.3	Discussion & Tutorial	---
16	5	5.1	Discussion & Tutorial	---

7. REFERENCES

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|----|--|-------------------------|
| 1. | Textile Testing | Booth |
| - | Statistical Methods for Textile Technology | Tippet |
| - | Statistical Methods | C.B. Gupta |
| - | Testing part I & 2 | Raygopalan
Angopalan |
| - | Technical Mathematics part - IV | Nirav Prakashan |