#### SCHEME OF STUDIES

#### **THIRD SEMESTER**

Subject

Index No.	Theory Papers	Hours/Week
TT 601	Design of Experiments & Quality Control	4
TT 603	Technical Textiles	4
TT 605	Mid-term Evaluation of Project /Seminar	

#### FOURTH SEMESTER

#### TT/TC 602 Dissertation & Viva-Voce

Each student individually will carry out a project of an experimental and/or theoretical nature in one of the main branches of textile technology/textile chemistry and present his findings in a systematic manner in the Project Report duly approved and signed by his Supervisor / Guide (to be nominated by the Director, TITS). Each candidate would submit three (3) typed copies of the Project Report to Director, TITS at least 15 days before the commencement of fourth semester examination. One copy of the Project Report will be returned to the candidate after viva-voce examination. The original report and a carbon copy will be retained by the concerned Department / Institution and the Supervisor respectively.

(500)

# **SCHEME OF EXAMINATION**

# THIRD SEMESTER

Index No.	Theory Papers	No. of	Time	Marks	Marks	Total
		papers		of	of	Makrs
			(Hrs)	Papers	C/Work	
TT 601	Design of Experiments & Quality	1	3	100	50	150
	Control					
TT 603	Technical Textiles	1	3	100	50	150
TT 605	Mid-term Evaluation of Project /	1			100	100
	Seminar					
	FOURTH SEMESRTER					
TT/TC 602	Dissertation & Viva-Voce	1	2	500	-	500

# **SYLLABUS – Third Semester**

# TT 601Design of Experiments & Quality Control3(150)

Section I (Two questions)

Regression and Correlation:

Significance of the study of correlation, Karl Pearson's coefficient of correlation, Rank correlation coefficient, Method of least squares, Regression Lines, Regression equations of Y and X, Least square parabola, Partial correlation coefficients (Three variables only)

Multiple correlation and Regression.

Section II (Two questions)

Statistical Quality Control:

Meaning of Statistical Quality Control, Control charts, namely, X,R,C and p charts. Benefits and limitations of SQC, acceptance sampling, selection of sampling plan. Construction of an OC carve.

Section III (4 questions)

Overview of measures of dispersion, random variates, probability distribution and testing of hypothesis.

Principles of experimental design, selecting a statistical design, analysis of variance (one way and two way clarifications) running experiments in blocks, Latin Squares, factorial design (a discussion). Use of replicates. Numericals based on Factional design namely,  $2^3$  experiment6s  $3^3$  experiments. Compounding in  $2^3$  and  $3^3$  experiments. Split plot and strip plot designs.

## **Reading List**

Title Author	
Design and analysis	Das & Giri
Fundamentals of statistics (Vol-II)	Goon, Gupta & Das Gupta
Fundamentals of statistics	Gupta & Kapoor
Business Statistics	Gupta & Gupta

# TT 603 Technical Textiles

Introduction: Definition, Textile materials in technical applications.

Fibres: Natural and Man-made fibres suitable for technical applications and their relevant properties.

Geotextiles: Mechanics of reinforcement, filtration and drainage of soils by geotextiles. Typical applications. Determination of soil particle size and pore size distribution, relations between soil particle and size and pore size distribution for hydraulic applications.

3 (150)

Medical textiles: Textiles in various medical applications. Absorbency of textile materials & methods of sterilization; application oriented design of typical medical textiles (e.g. porous graft or trashed tube). Materials used and design procedure for protecting wounds, cardiovascular application, Sutures etc.

Automotive Textiles: Fibres used for automotive applications-upholstery, carpeting, preformed parts, tyres, safety devices, filters and engine compartment items. Brief description for the manufacture and application of these devices or parts.

Rigid composites: Three dimensional fabrics and triaxially braided materials for composites.

Filtration: Principles and some mathematical models of wet and dry filtrations. Characteristics properties of fibres and fabrics in selective examples of filtration.

Ropes and Cordages: Methods of production. Application oriented structure and production of ropes, cordages and twines.

Protective clothing: Thermal protection. Ballistic protection. Protection from

electromagnetic radiation and static hazards. Protection against micro-organisms, chemicals and pesticides.

## TT 605 Mid-term Evaluation of Project Work / Seminar (100)

# FOURTH SEMESTER

(500)

#### TT/TC 602 Dissertation & Viva-Voce

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