

GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE TECHNOLOGY

B. E. SEMESTER: VII

Subject Name: **Fibre Science & Elements of Textile Structure**

Subject Code: **172905**

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam (E)		Mid Sem Exam (Theory) (M)	Practical (Internal)
				Theory	Practical		
4	0	0	4	70	0	30	50

Sr. No.	Topic	Total Hrs	Text Book
1	An Introduction to fibre structure, Methods of investigation of structure like IR, X-ray, etc. Approaches to polymer fibre structure	8	Physical properties of textile fibres Morton W. E. and Hearle J. W. S.
2	Moisture absorption, properties, Rate of moisture absorption, Heat of sorption, water retention and swelling; Theories of moisture absorption- general view, absorption in crystalline and amorphous regions, quantitative theories;	8	Physical properties of textile fibres Morton W. E. and Hearle J. W. S.
3	Theories of mechanical properties of natural and man-made fibres, viscoelastic behaviour, comparison of properties of various fibres.	8	Physical properties of textile fibres Morton W. E. and Hearle J. W. S.
4	Idealised helical yarn geometry. Yarn count and twist factor. Theoretical methods for yarn diameter. Twist contraction. Twist and fiber packing in yarns. Different method of packing and packing density. Numerical based on the above.	11	Structral Mechanics of Fibres, Yarns and Fabrics Hearle J.W.S., Grosberg P and Backer S.,
5	Fabric Geometry - Fabric sett, cover (Fractional & Total) and aerial density. Porosity. Peirce model for plain fabric, Special conditions like straight weft, jamming, square cloth etc. Theory of crimp interchange. Numerical based on the above. Fabric weight.	11	Structral Mechanics of Fibres, Yarns and Fabrics Hearle J.W.S., Grosberg P and Backer S.

Reference Books:

1. Introduction to Fibre Physics - Morton & Hearle
2. Textile Yarns: Technology, Structure and Application – Goswami, B.C., Martindale J and Scardino
3. Mechanics of Flexible Fibre Assemblies - Hearle J.W.S., Thwaites J.J and Amirbayat
4. Textile Mathematics Vol. II & III - Booth, J.E.
5. Woven Cloth Construction – Marks & Robinson