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Dedication

This work is dedicated to the faculty members of Fabric Manufacturing Department of National Textile University.

ACKNOWLEDGEMENT

First and foremost, I would like to thank Allah who gave us strength, knowledge and capability to complete this piece of work. Two years ago we had this discussion in our team about lack of any compiled data based on calculation. We would jump to supporting in writing a book covering all the aspects in the target field. I would like to express my sincere gratitude to my colleagues, who saw me through this book; to all those who provided support, talked things over, read, wrote, offered comments, and assisted in the editing, proofreading and design. Their determined efforts have turned this book into a reality.

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PREFACE

The textile fabrics have a wide range of application in areas like apparels, home textiles and technical textiles. The manufacture of a cost effective quality product requires the careful planning and thorough knowledge of the production process. This objective cannot be achieved without the know-how of the calculations involved in the fabric formation process. The latest developments and automation in the textile machinery has resulted in a more efficient production cycle. Unfortunately, the published work available on the topic of woven fabric calculations is quite out dated, while no significant work has been reported on the calculations of knitted fabrics.

This book is organised into nine different chapters. Chapter 1 focuses on the systems for linear density of yarn, and their inter-conversion. Chapter 2 addresses the winding calculations. Chapter 3 and 4 are dedicated to warping and sizing calculations respectively. Chapter 5 is cloth calculations, while chapter 6 is weaving shed calculations. Chapter 7 highlights different theories and structural parameter of fabric geometry, while chapter 8 includes specialty calculations like terry towel, ball warping, filament warping and sample warping. The chapter 9 is dedicated to the knitting calculations, both warp and weft knitting.

The whole range of steps and calculations involved in the fabric formation process from amount of raw material to the costing of final product have been included in the book. I hope, this book is equally beneficial for the beginners, textile engineering students and professionals of the field.

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National Textile University