

(Textile Engineering Department)

Undergraduate

Course Title: **Fiber Physics**

Prerequisite: Differential Equations, Fiber Science, Strength of Materials (I)

Number of Credits: 2

Lecturer: Dr. Mohammad Reza Babae Lavasani

Course Topics:

• General, familiarity with fiber physics, the subject and importance of fiber physics, Introduction of Standard Methods Resources
• An introduction to textile fiber structure, Methods of investigation of structure
• Fiber diameter and its measurement methods
• Fiber length and its measurement methods
• Fiber density and its measurement methods
• Fiber moisture absorption, definitions and its measurement methods
• Fiber inflation, definitions and measurements
• Mechanical properties along the length
• Sample uniformity effects in mechanical properties along the length
• Elastic recovery of fibers and its methods of measurement
• Time effects (creep, stress loss, viscoelastic behavior)
• Fast tests, dynamic experiments and measurement methods
• Electrical properties
• Frictional properties
• Thermal Properties

Reading Resources:

- W. E. Morton and J. W. S. Hearle, Physical properties of textile fibres, Fourth edition, Textile institute publication, Woodhead Publishing in Textiles: Number 68, 2008.