

(Textile Engineering Department)

Graduate

Course Title: **Advanced Nanofibrous Structure**

Lecturer: **Dr. Hajir Bahrami**

Course Topics:

- Introduction to Composite Materials
- Introduction: Mechanics Terminology: Effective parameters on the mechanical properties of composites
- Macromechanical analysis of composite materials
- Investigation of types of materials
- Physical concept of tensor in orthotropic materials
- Failure criteria of composites
- Micromechanical analysis of composite materials
- Micromechanics of materials: Rule of Mixture
- Longitudinal and transverse elastic modulus; Longitudinal and transverse shear modulus
- Longitudinal and transverse Poisson's ratio
- Macromechanical analysis of composite materials
- Laminate Code
- Stress - Strain relationship of laminates
- Forming methods
- Analysis of Sandwich Structure; Methods of analysis of Textile composites; Energy Methods for Analyzing of composites

Reading Resources:

- A. K. Kaw, Mechanics of Composites Materials, Taylor & Francis Group, 2nd Ed., 2006.
- B. Harris, Engineering Composite Materials, Institute of Materials, 1st Ed. 1999.
- A. C. Long, Design and Manufacture of Textile Composites, Woodhead Publishing, 2005
- J. R. Vinson and R. L. Sierakowski, The Behavior of Structures Composed of Composite Materials, KLUWER ACADEMIC PUBLISHERS, 2nd Ed. 2004.