

(Textile Engineering Department)

Graduate

Course Title: **Fiber Composites**

Lecturer: **Dr. Hajir Bahrami**

Course Topics:

- Introduction To composites
- Classification and Matrices
- Polymers used in Composites and classification
- polycarbonates and Linear polyesters Acetal polymers, cellulosic polymers, fluoropolymers, Polyamids
- Polyester. Polyimides, phenolic resins, and vinyl resins
- Polyether ether ketone, poly phenylene
- Fibers used in composite reinforcements such as carbon fibers, Glass fibers
- Basalt fibers, bore fibers, bore nitrate, Aramid fibers, PE, ceramic fibers Alumina etc.
- structure and fiber properties, preparation of Carbon Fiber stabilization, carbonization and graphitization
- Midterm exam Composite manufacturing techniques and molding
- molding of different types of molding closed molds and open mold processes
- Extrusion, Blow molding, coatings. impregnation, etc. designing a fibers composites and parameters
- Structure and properties of Carbon, glass composites with epoxy. polyesters and other resins
- Properties of unidirectional composites and parameters effecting the properties in transverse and longitudinal directions
- Failure in different direction under pressure
- Load transfer theories. properties of composites in Fatigue, Impact properties and standards to measure them
- Tape composites and transfer phenomenon in composites
- Interface and its properties and importance in Composites surface tension elastic properties of PP composites

Reading Resources:

- Composite polymeric materials
- Had book of polymer Fiber composites.
- Advanced fibers & Composites
- Analysis and performance of Fiber composites
- Carbon fibers
- Hand book of polymer Composites for Engineers
- Fiber reinforced composites.
- Manufacturing of polymer Composites
- Journal paper