AE 526 Advanced Composites Manufacturing

Course Syllabus

Review of the manufacturing methods for composite materials with special emphasis on polymer matrix composites; analysis of fiber processing techniques, interfacial treatments, and composites fabrication methods; analytical treatment of process modeling including heat transfer, cure kinetics, resin flow, and residual stresses.

- Fiber Manufacturing
  - Glass
  - Carbon
  - Polymer
- Matrix Materials
- Interfacial Treatments
- Composites Manufacturing Methods
- Processing Science of Thermosetting Composites
  - Reaction Kinetics
  - Void Modeling
  - Flow Modeling
  - Heat Transfer Modeling
  - Process Simulations
- Processing Science of Thermoplastic Composites
  - Crystallization
  - Consolidation
- Elastic Deformation of Fiber Bundles
- Autoclave Processing of Composites
  - Fundamentals
  - Tooling
- Filament Winding Process Modeling
- Liquid Composite Molding
  - Fundamentals
  - Process Modeling
- Processing-Induced Stresses
- Processing of Textile Composite Preforms
  - Linear Assemblies
  - Planar Assemblies

Recommended Text: