

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:

Gutowski, Advanced Composites Manufacturing, John Wiley and Sons, Inc., 1997