



DarkAero Aerospace Composites Course Curriculum and Schedule

DAY 1 - 8AM-5PM

8AM - Morning Session - Classroom Theory - What are Aerospace Composites?

Introductions / Orientation

Fiber Reinforcement (Fiber)

- Fiber Types
- Weave Types
- Sizing Agents

Polymer Matrix Types (Resin)

- Epoxy
- Vinyl Ester
- Polyester
- Thermoplastics

Core Materials

- Foam
- Honeycomb
- Infusable Cores
- Balsa

Processes (methods of combining fiber and resin)

- Wet Layup
- Wet Layup + Vacuum Bag
- Filament Winding
- Infusion / VARTM
- Out of Autoclave Prepreg
- Autoclave Prepreg

Post Curing

- Cure Reaction Mechanics
- Cure Schedules

12PM Lunch

1PM Afternoon Session - Process Demonstration of Infusion

Safety Equipment and Best Practices

Discussion of Process Equipment

Infusion Setup and Demonstration

Troubleshooting Methods

Tips and Tricks

5PM - Adjourn

DAY 2 - 8AM-4:30PM

8AM - Morning Session - Classroom Theory - Designing Composite Parts

Understanding Design Requirements

- Loads
- Part Weight Targets
- Temperature Capability
- Environmental Factors
- Manufactuability
- Cost
- Quantity
- Quality

Selection of Fiber, Resin, Core, & Process

Fiber Orientation and Laminate Thickness

Structures and Failure Modes

12PM Lunch

1PM Afternoon Session - Infusion Demonstration Continued

Demolding Part

Trimming Part - Tools and Techniques

Post Curing - Discussion from Alec Redmann PhD

Quality

- Measures of Quality
- Inspection Methods

Testing

- Non-destructive Test Methods
- Destructive Testing
- Using Test Results to Drive the Design

4:30PM Adjourn