

COMP 216: Advanced Composites Technology II

This course is a combination of classroom and laboratory experience. It builds on the skills learned in COMP 215. Advanced terminology will be included in a course long project that will demonstrate industry work environment and quality standards.

Course Student Learning Outcomes

1. Articulate the hazards, and workplace precautions that need to be taken when working with hazardous chemicals such as resins, catalysts, epoxies, solvents, and fillers, and safely select and prepare materials and molds to make basic composite parts.
2. Compare and contrast the material properties of various matrix materials (resins), reinforcements (fabrics), and core materials, and demonstrate an understanding of basic design considerations in working with these materials to create composite products.
3. Demonstrate the ability to fabricate a functioning vacuum bag for a complicated 3-dimensional shape, and the proper placement and construction of bag film pleats.
4. Fabricate quality composite projects according to fabrication drawings, directions, and specifications using hand lay-up methods, and prepare comprehensive lab reports using a template provided.
5. Fabricate parts using hand wet layup techniques including surface preparation, surface coating, filleting, ply orientation and wet out.
6. Build vacuum infused parts to industry standard level of quality, demonstrating competency with vacuum infusion process (VIP) methods.
7. Fabricate parts using hand prepreg layup methods, demonstrating competency with debulking, thermocouple use, ply orientation and cure cycles.
8. Compare at least three composite molding technologies commonly found in the industry by discussing benefits, drawbacks, and the proper applications of each.
9. Demonstrate the ability to calculate or determine key fabrication parameters (i.e. resin content, fiber weight, mix ratio, cure time, cure temperature, consolidation pressure, and debulking).
10. Demonstrate common fastener assembly and repair techniques with an emphasis on joint design.
11. Demonstrate adhesive bonded assembly and repair techniques with an emphasis on surface preparation and joint design.

Credits: 11

Program: **Advanced Manufacturing / Composites Technology**