

COMP 215: Advanced Composites Technology I

This course is a combination of classroom and laboratory experience. Introduction will include a brief history of composites. Emphasis will be placed on composite terminology, adherence to laboratory safety rules, and strict conformance to directions. While this course is intended to form the foundation for advanced composite courses, it will have direct ties to industry required skills.

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. Interpret & use SDS (MSDS) to ensure safe practices in the shop & on the production floor.
3. Use of PPE (Personal Protective Equipment) and normal maintenance of it.
4. General & tool-specific shop safety practices including machine guards, defective tools, compressed air hazards, sharp objects, and interpretation of machinery caution signs & labels.
5. Recognize & define composites vs. advanced composites, and explain their advantages & disadvantages.
6. Describe important milestones in composites' history and outline typical composites applications in industry. Explain the basic differences between open mold, closed mold, and prepreg layup techniques.
7. Demonstrate knowledge of the elements of Lean Manufacturing: 5S, Just in Time, Kaizen, & others.
8. Demonstrate knowledge of semi- and precision measurement tools and apply manufacturing techniques of precision and accuracy.
9. Demonstrate knowledge of imperial and metric systems, and the calibration, use, and care of semi- and precision tools in an manufacturing environment.
10. Identify & use basic elements of standard 2D drawings including scale, line types, dimensions, views, sections, revisions, ply orientation charts, & lay-up schedules to kit & fabricate composite projects.
11. Perform basic freehand technical sketching including lines, shapes, lettering, & simple pictorial drawings.
12. Write/revise a targeted resume with supporting materials to secure employment interviews. Research jobs & openings in advanced manufacturing. Practice interview skills and go on a mock interview with a review afterwards.

Credits: 11

Program: **Advanced Manufacturing / Composites Technology**