



VACUUM INFUSION 2019 - CERTIFIED COMPOSITES TECHNICIAN (CCT - VIP)

TOPIC	Resource	Body of Knowledge %
Module 1 General Composites Knowledge	Basic Composites Manual / VIP 2019 Study Guide	10%
Industry introduction - History, advancements, industry basics		
Overview of Materials and Matrix		
Safety, Manufacturing Processes, Options and choices		
Why VIP and its many variations		
Module 2 Tooling for VIP and Closed Molding Processes	VIP Study Guide	15%
Vacuum Infusion Process and many variations		
Tooling requirements, options, features for Closed Molds		
Fundamentals of tool development and technology		
Closed mold requirements and options for B side tooling - LRTM, CCBM, other variations		
Digital design, simulation and tooling techniques		
Module 3 Understanding Vacuum and Pressure	VIP Study Guide	10%
Motive Force in Driving Resin Flow- comparisons in processing		
Types of vacuum pumps and vacuum systems		
Resin Volatilization and Vacuum pressure		
Module 4 Resin Flow Theory	VIP Study Guide	15%
Flow Characteristics		
Darcy's Law and resin flow		
Viscosity, Permeability and Pressure Differential		
Dynamics of infusion, flow patterns and infusion		
Module 5 Vacuum Bag Configuration and Fabrication	VIP Study Guide	10%
Bags, techniques in use, size, sealing and use		
Fabrication of bags		
Leaks, drawdown process, leak detection, process		
Module 6 VIP Molding Process	VIP Study Guide	15%
Sequence for the VIP Process		
Module 7 Light Resin Transfer Molding Process	VIP Study Guide	5%
Process variations - B side molds - infusion		
Module 8 VIP and Light RTM Molded Components	VIP Study Guide	10%
Serial Production and Advanced Production		
Preforms, robotics and fiber placement options		
Resin Mix and Metering Equipment		
Process Automation Enhancements and Industry 4.0		

Temperature control		
Module 9 Closed Mold Quality Control	VIP Study Guide / Basic Composites Manual	10%
Procedural Quality Control / Lean Principles		
Documentation of Procedures for Production		
Processing Documentation / Standards / Traceability		
Digital and CAD tools for Design , Quality, Production and Simulation		
Quality Essentials, Cosmetic Quality		
Controlling Laminate voids and process standards		