

COMPOSITES CURRICULUM - Unit Information

This unit forms part of the Masters level Composites Curriculum developed by Bristol and Plymouth Universities.

Taught block title	Manufacturing Operations A	
Unit title	Process monitoring	
Level (Credit points)	H (2)	
Unit director	Professor John Summerscales	
Unit description		
This unit forms part of the Masters level Composites Curriculum. It builds on the unit "Introduction to Composites", "Composites Constituents" to provide Learners with a good understanding of the quality systems appropriate to composites manufacture.		
Core subjects to be covered		
1. Quality Management Systems standards (ISO 9000)	7. Temperature, Pressure, and calibration	
2. Environmental Management Systems standards (ISO 14000)	8. Viscosity, flow rate, and flow front position	
3. Occupational Health and Safety Management standards (OHSAS 18000)	9. Degree-of-Cure: dielectrometry, IR/Raman, ultrasonics and mechanical impedance analysis	
4. Project planning. Technology Readiness Levels (TRL).	10. Statistical Process Control. Six Sigma.	
5. Problem Solving Techniques	11. QFD and PFMECA.	
6. Quality Circles. Kaizen. Poka-Yoke.	12. Process control: PID, ANN, FL, GA	
	13. Big Data & Industry 4.0	
Statement of unit aims		
The aims of this unit are to:		
<ol style="list-style-type: none"> 1. Give Learners an understanding of composite manufacturing quality systems. 2. Provide Learners with an overview of the resources available for problem identification and resolution. 3. Give Learners the tools to run an effective and efficient manufacturing system. 		
Statement of learning outcomes		
Learners will be able to:		
<ol style="list-style-type: none"> 1. Provide a clear overview of quality systems for composites manufacture 2. Establish appropriate procedures for process control. 3. Understand the issues which enable optimisation of processes. 		
Methods of teaching	7 lectures, 2 lab classes and demonstrations, 1 class exercise	
Assessment details if required	Written assignment (85%), 20 minute assessed presentation (15%)	
Timetable information	2 days of teaching in a block	