

COMPOSITES CURRICULUM - Unit Information

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

Taught block title	Materials	
Unit title	Characterisation of fabric reinforcements	
Level (Credit points)	H (2)	
Unit director	Professor John Summerscales	
Unit description		
<p>This unit forms part of the Masters level Composites Curriculum. It builds on the unit “Introduction to Composites”, “Composites Constituents” and “Reinforcement Types” to provide Learners with a good understanding of the characteristics of fabric reinforcement, including compressibility, drape and permeability.</p>		
Core subjects to be covered		
<ol style="list-style-type: none"> 1. Review of fabric reinforcement architectures. 2. Textile terms and definitions. 3. Areal weight, tow count, cover factor, etc. 4. In-plane characterisation (fabric testing) 5. Through-plane characterisation for single or multiple layers (volume fraction <i>vs</i> pressure, nesting) 	<ol style="list-style-type: none"> 6. Thermal characterisation of fabrics 7. Drape (natural) and conformability (assisted) to curved surfaces 8. Automated handling of fabrics 9. Permeability to liquid resin/molten polymers 10. Process-property-microstructure relationships 	
Statement of unit aims		
<p>The aims of this unit are to:</p> <ol style="list-style-type: none"> 1. Give Learners an understanding of the characterisation techniques for flexible materials. 2. Provide Learners with an overview of the advantages and constraints of differing reinforcement architectures. 3. Give Learners the tools to select a reinforcement which balances manufacturability with the required composite properties. 		
Statement of learning outcomes		
<p>Learners will be able to:</p> <ol style="list-style-type: none"> 1. Provide a clear overview of the range of parameters which define a fabric reinforcement 2. Establish an appropriate testing procedure for each parameter necessary to pre-manufacture handling and composite performance. 3. Understand the issues constraining the use of different fabric architectures. 		
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	