

COMPOSITES CURRICULUM - Unit Information

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

Taught block title	Performance A	
Unit title	Durability	
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” and “Composites Constituents” to provide Learners with a good understanding of the deterioration of composite systems over extended exposure to degrading conditions.		
Core subjects to be covered		
1. Polymer transition temperatures	7. Biological exposure: fouling, fungi	
2. Thermal degradation and fire	8. Mechanical durability: creep, fatigue, impact	
3. Moisture diffusion	9. Environmental stress corrosion interactions	
4. Marine exposure: osmosis and blistering, galvanic corrosion	10. Standard methods of test (NPL MAT85)	
5. Weathering: electromagnetic and ionising radiation, precipitation and particle erosion	11. Highly Accelerated Life Testing (HALT)	
6. Chemical attack: acids, alkalis, solvents	12. Structural Health Monitoring (SHM)	
	13. Lifetime prediction	
Statement of unit aims		
The aims of this unit are to:		
<ol style="list-style-type: none"> 1. Give Learners an understanding of the limitations of composites arising from degradation mechanisms 2. Provide Learners with an overview of the mechanisms of deterioration of composite performance 3. Give Learners the tools to design commercial structures that will satisfy performance requirements for the whole life cycle 		
Statement of learning outcomes		
Learners will be able to:		
<ol style="list-style-type: none"> 1. Provide a clear overview of the mechanisms of deterioration of composites 2. Establish an appropriate composite system for a specific application respecting the operating environment 3. Understand the issues constraining the use of composites in harsh conditions. 		
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	