

COMPOSITES CURRICULUM - Unit Information

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

Taught block title	Performance B	
Unit title	Multifunctional Composites	
Level (Credit points)	H (2)	
Unit director	Vijay Kumar Thakur	
Unit description		
<p>This unit forms part of the Masters level Composites Curriculum. It provides Learners with no prior experience with multifunctional composites with a general introduction to the core concepts in understanding and applying multifunctional composites in engineering applications.</p>		
Core subjects to be covered		
<ol style="list-style-type: none"> 1. Introduction of multifunctional composites 2. Why use multifunctional composites 3. Design and manufacture 4. Structural functions 5. Non-structural functions 6. Mechanics of multi-functional composite materials and structures 7. Characterization 8. Multifunctional Polymer Composites 9. Multifunctional Cement Composites 10. Multifunctional Ceramic Composites 11. Multifunctional Metal Composites 	<ol style="list-style-type: none"> 12. Multifunctional Bio-Composites 13. Multifunctional Nano-Composites 14. Smart Multifunctional Composite 15. Applications 16. Multifunctional Composites for Energy Storage 17. Multifunctional Composites for Energy Harvesting 18. Multifunctional Composites Aerospace Structures 19. Multifunctional Composites for Automotive 20. Multifunctional Composites for Biomedical 	
Statement of unit aims		
<p>The aims of this unit are to:</p> <ol style="list-style-type: none"> 1. Provide Learners with an overview of multifunctional composite materials 2. Identify the needs of multifunctional composite materials 3. Give learners an understanding of the different types of multifunctional composite materials 4. Provide the learners with an understanding of potential applications of multifunctional composite 		
Statement of learning outcomes		
<p>Learners will be able to:</p> <ol style="list-style-type: none"> 1. Provide a basic overview of the development of multifunctional composite materials 2. How to engineer multifunctional materials to achieve desired properties 		

3. Understand approaches for optimizing materials properties and their applications	
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