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	Sustainable composites
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 capabilities and limitations of "sustainable" composites.

Core subjects to be covered

1. Sustainability: economic, environmental, equity, governance
2. Circular economy, Bio-economy
3. Natural fibres (animal, mineral, vegetable)
4. Plant fibres: agriculture and extraction
5. Plant fibres: properties and durability
6. The fibre-matrix interface
7. Plant fibres: composites processing
8. Plant fibre composites: properties and durability
9. Plant fibre composites: end-of life
10. Bio-based polymers
11. Bio-degradable polymers Wood-based composites and panel products
12. Life Cycle Costing
13. Life Cycle Assessment: ISO 14040 series
14. Environmental Impact Classification Factors
15. "Goal and Scope" and allocation in LCA
16. Software: Simapro, EcoInvent, CES EduPack

Statement of unit aims

The aims of this unit are to:

1. Give learners an understanding of the range of materials and process options
2. Provide Learners with an overview of the capabilities and limitations of "sustainable" composites
3. Give learners the tools to establish if "sustainable" composites are the most appropriate choice for a specific application
4. Provide the learners with an understanding of process issues constraining the manufacture of natural fibre composites

Statement of learning outcomes

Learners will be able to:

1. Provide a clear overview of the capabilities and limitations of "sustainable" composites
2. Establish if "sustainable" composites are the most appropriate choice for a specific application
3. Understanding of process issues constraining the manufacture of natural fibre composites

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