COMPOSITES CURRICULUM - Unit Information

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

Taught block title	Core Block
Unit title	Product Design
Level (Credit points)	H (2)
Unit director	Professor Kevin Potter

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 methodologies used in the development of composite products.

Core subjects to be covered

1. The product design cycle
2. The product design team
3. Cost and risk through the product design cycle
4. Requirements capture
5. Specification development
6. Stage gates and review processes
7. Conceptual or outline design
8. Methods for generating design concepts
9. Costing in the design process, including minimising wastes
10. Geometry, materials, process decisions
11. Detailed design methods
12. Estimating performance of composite structures
13. Back of the envelope and initial analytical methods
14. Detailed analytical methods
15. Numerical methods and FEA
16. Development of production costs
17. Prototyping
18. Testing and validation
19. Transitioning to production
20. Lessons learned - capturing product development knowledge.

Statement of unit aims

The aims of this unit are to:

1. Provide Learners with an overview of the composites product design process in an industrial context
2. Identify the stages in the process and the importance of following a clear process
3. Enable the learners to contribute to product design teams as quickly as possible
4. Provide the learners with an understanding of both best practice and the pitfalls in composites product development

Statement of learning outcomes

Learners will be able to:

1. Provide a clear overview of the processes involved in the design of composites products
2. Understand the staged development of successful composite products
3. Understand some of the issues and methodologies involved in the testing and validation of composite products prior to volume production

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