COMPOSITES CURRICULUM - Unit Information

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

Taught block title	Product design A
Unit title	Standards and certification
Level (Credit points)	H (2)
Unit director	Stefanos Giannis

Unit description

This unit forms part of the Masters level Composites Curriculum. It builds on the Performance A and B units to provide Learners with a good understanding of the role of composite materials standards and design codes and their use in the certification of composite structures

Core subjects to be covered

1. Introduction
2. Need for Regulations, Codes and Standards (RCS)
3. Role of regulators
4. Role of standardisation bodies and classification societies
5. Standards creation and pre-standardisation work
6. Round-robin validation of test methods
7. Design codes and relation to standards including industry standards e.g. AITM (aerospace) and AASHTO/CIRIA (FRP bridges)
8. Composite materials test standards
9. Interpretation of materials test standards
10. Certification pyramid and product validation chain
11. Acceptable means of compliance in certification of composite structures
12. Statistical interpretation of qualification test data including calibration, errors and uncertainty
13. Design data versus experimental data
14. Role of numerical simulation in certification of composite structures including methodology for ascertaining validity of data from the scientific literature used to inform modelling

Statement of unit aims

The aims of this unit are to:

1. Provide Learners with an understanding of the need for suitable Regulations, Codes and Standards (RCS) for composite materials
2. Give learners an overview of the certification process of composite structures in a number of industry sectors
3. Enable learners to analyse qualification test data and obtain appropriate design data

Statement of learning outcomes

Learners will be able to:

1. Interpret and use composite materials standards
2. Choose the right test method and standard for qualifying composite materials and certifying structures
3. Understand how to statistically analyse test data to obtain design data for composite materials

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