

Resistant Materials

3.3 Designing and making principles

Demonstrate and apply knowledge and understanding of designing and making principles in relation to the following areas:

- investigation, primary and secondary data
- environmental, social and economic challenge
 - the work of others
 - design strategies
- communication of design ideas
- prototype development
- selection of materials and components
 - tolerances
- material management
 - specialist tools and equipment
- specialist techniques and processes.

3.1 Core technical principles

In order to make effective design choices students will need a breadth of core technical knowledge and understanding that consists of:

- new and emerging technologies
- energy generation and storage
- developments in new materials
- systems approach to designing
 - mechanical devices
- materials and their working properties.

3.2 Specialist technical principles

Develop an in-depth knowledge and understanding of the following specialist technical principles:

- selection of materials or components
 - forces and stresses
- ecological and social footprint
 - sources and origins
 - using and working with materials
- stock forms, types and sizes
 - scales of production
 - specialist techniques and processes
- surface treatments and finishes.

