

Unit 15 Responsible design PLC

Topic Area	RAG Before Taught	RAG After Taught	RAG after Assessment	RAG after revising	RAG after Mocks
Students should be aware of, and able to discuss, the importance environmental issues in design and manufacture, including: • the responsibilities of designers and manufacturers in ensuring products are made from sustainable materials and components • the environmental impact of packaging of products, eg the use of excessive packaging and plastics.					
Students should be aware of, and able to discuss, the concept of a circular economy, including: • how products are designed to conserve energy, materials and components • the design of products for minimum impact on the environment including raw material extraction, consumption, ease of repair, maintenance and end of life • sustainable manufacturing including the use of alternative energy and methods to minimise waste • the impact of waste, surplus and by products created in the process of manufacture including reuse of material off-cuts, chemicals, heat and water • cost implications of dealing with waste • the impact of global manufacturing on product miles.					
Students should be aware of, and able to discuss, the importance of national and international standards in product design, including: • British Standards Institute (BSI) • International Organisation for Standardisation (ISO) • Restriction of Hazardous Substances (ROHS) directive • battery directive • polymer codes for identification and recycling • packaging directives • WEEE directives • energy ratings of products • eco-labelling: • the Mobius Loop • the European Eco-label • NAPM recycled mark • the EC energy label • the Energy Efficient label and logo • Forest Stewardship Council (FSC) • EPA energy star					
Students should be aware of, and able to discuss and demonstrate, the importance of planning for accuracy when making prototypes and making recommendations for small, medium and large scale production.					
Students should be aware of, and able to discuss and demonstrate, the procedures and policies put in place to reduce waste and ensure manufactured products are produced accurately and within acceptable tolerances, including quality assurance systems including Total Quality Management (TQM), scrum, Six Sigma and their applications to specific industrial examples including critical path analysis.					
Students should be aware of, and able to discuss and demonstrate, quality control, including: • the monitoring, checking and testing of materials, components, equipment and products throughout production to ensure they conform to acceptable tolerances • specific quality control methods including the use of 'go-no go' gauges, laser or probe scanning and measuring • use of digital measuring devices such as vernier callipers and micrometers • non-destructive testing such as x-rays and ultrasound.					