

A Level Keywords and Headlines from the DfE Subject Content

This document is intended as a starting point for reviewing a department's provision for the A level D&T. It can be used as a quick reference tool when auditing and planning a curriculum.

Information is taken from the A level Subject Content for D&T (2015) <https://goo.gl/K13Ubg>. This is the document that the awarding bodies had to use to when writing their specifications.

Using these statements when starting to curriculum plan rather than the awarding body specifications allows the curriculum to be stripped back to its key learning priorities and creates a more accessible tool to use for mapping, auditing and reviewing.

Wording in the handout is the same as the original document with only minor changes to make formatting the document easier. It is still recommended, however, that the original document is read in full.

Blank rows might be used to identify content linked to specific school and community needs.

The statements are categorised under the side headings in line with the headings used in the original document.

Headings used on the boxes link to headings used in the original document. The 'technical principle', 'design and make principle' cards are the most important ones to focus on to begin with when using the cards as an audit tool, along with the cards relevant to the material specialism being studied (product design, fashion and textiles or design engineering).

The maths, science and cards based on the introduction and aims section of the document are important but much of the content of these cards links to some of the technical principle and design and make cards so these cards may be more useful for additional information and for cross referencing.

This document is in PDF format.

On some of our courses we use this document and a range of other curriculum documents we have created to consider what a 5 year curriculum with sequence and progression built in might look like (7 year including A level). See our course calendar at <http://www.julieboyd.co.uk/CPD/calendar/>

A Level Keywords and Headlines for D&T

		✓
Introduction, Aims & Objectives	Be open to taking design risks, showing innovation and enterprise whilst considering their role as responsible designers and citizens	
	Develop intellectual curiosity about the design and manufacture of products and systems, and their impact on daily life and the wider world	
	Work collaboratively to develop and refine their ideas, responding to feedback from users, peers and expert practitioners	
	Develop the capacity to think creatively, innovatively & critically through focused research and the exploration of design opportunities arising from the needs, wants values of users and clients	
	Gain an insight into the creative, engineering and/or manufacturing industries	
	Develop knowledge & experience of real world contexts for design and technological activity	
	Be able to make informed design decisions through an in-depth understanding of the management and development of taking a design through to a prototype/product	
	Develop an in-depth knowledge and understanding of materials, components & processes associated with the creation of products that can be tested and evaluated in use	
	Be able to create & analyse a design concept & use a range of skills & knowledge from other subject areas, including mathematics and science, to inform decisions in design & the application or development of technology	
	Be able to work safely and skillfully to produce high-quality prototypes/products	
	Have a critical understanding of the wider influences on design and technology, including cultural, economic, environmental, historical and social factors	
	Develop the ability to draw on & apply a range of skills & knowledge from other subject areas, including the use of maths & science for analysis & informing decisions in design	
	Core Technical Principles	How manufactured products typically involve multiple materials, processes & techniques & that designers need to be able to discriminate between them & select them appropriately for use, experimenting in order to improve, refine & realise a design
The requirements for product design, development & manufacture, including: fitness for purpose; meeting the criteria of specifications; accuracy of production; appropriate use of digital technologies; aesthetics; ergonomics & anthropometrics		
The use of media, communication & presentation techniques, including drawing & sketching, & writing reports to record, explain & communicate their design decisions, providing sufficient information to enable others to interpret their design intentions		
Digital design and digital manufacture, including computer-aided design (CAD)/computer-aided manufacturing (CAM), modelling and simulation.		
Safe working practices, including identifying hazards and understanding the need for risk assessments		
How skills and knowledge from other subject areas, including mathematics and science, inform decisions in design and the application or development of technology.		
The main features of manufacturing industries, including stages of production, quality assurance & quality control, modern manufacturing methods & systems when combining or processing materials, sustainability, & services to the customer including legal requirements.		
The regulatory & legislative framework for health and safety and the impact on designing and making.		
The use of feasibility studies on the practicability of proposed solutions to problems		
Design for manufacturing, repair or maintenance, and product life.		
The implications of intellectual property, registered designs, registered trademarks, copyright, design rights & patents.		
How to achieve an optimum use of materials & components by taking into account the relationship between material cost, form, & manufacturing processes, & the scale of production		
The role of marketing, enterprise, innovation & collaboration in the development of products		
Core Designing & Making Principles	Design theory, including key historic movements/figures and their methods	
	The application of knowledge & understanding in a product development process to design, make and evaluate prototypes/products	
	User-centred design: the investigation & analysis of a problem within a context, & the needs, wants & values of users, to define a design opportunity or problem leading to the production of a design brief & specification to direct, inform & evaluate their design practice	
	How the appraisal of technological developments, both current & historic, needs to take into consideration social, moral & ethical factors & how these can impact on the work of designers and technologists	
	How to critically analyse and evaluate their own ideas and decisions whilst using iterative design and make processes	
	In relation to the subject endorsement, how to select & safely use a range of specialist tools, techniques, processes, equipment and machinery appropriate to the design and manufacture of domestic, commercial & industrial products & systems	

Core Designing & Making Principles	How to evaluate their prototypes/products taking into account the views of potential users, customers or clients	
	How to measure, determine, & apply the degree of accuracy and precision required for products to perform as intended	
	Approaches to project management, such as critical path analysis, scrum or six sigma	
	A range of strategies, techniques and approaches to explore, create and evaluate design ideas, such as user-centred design, circular economy, and systems thinking	
	Design for manufacture, including planning for accuracy and efficiency when making prototypes and making recommendations for small, medium and large scale production	
	The environmental factors affecting disposal of waste, surplus materials, components and by-products, sustainability, and costs	
	The application of relevant standards to their design tasks including those published by the British Standards Institute (BSI) and the International Organisation for Standardisation (ISO) specific to the subject	
	The stages of a product life cycle	
Additional Specialist knowledge: Product Design	Characteristics & working properties of materials relevant to product design & manufacture, including: metals, woods, polymers, textiles, composites, smart & modern materials	
	The use of adhesives, permanent, and semi-permanent fixings	
	The use of surface finishes & coatings to enhance appearance, and methods of preventing corrosion & decay such as paints, varnishes, sealants, preservatives, anodising, plating, coating, galvanization & cathodic protection	
	The application of smart and modern materials	
	The performance characteristics of woods, metals, and polymers including toughness, hardness, elasticity and durability in relation to specific product applications	
	Production processes including moulding, extrusion, laminating, milling, turning, casting, stamping, and forming; the use of ICT, prototyping, jigs and fixtures	
	Industrial & commercial practice including manufacturing processes & systems, product manufacture & maintenance, production scales, & quality control in relation to manufacturing & the design industries	
	Modular/cell production systems, just-in-time manufacturing, bought-in parts and components and the use of standardised parts	
	Rapid prototyping	
Additional Specialist knowledge: Fashion & Textiles	Characteristics & working properties of materials relevant to fashion & textiles design, development, & manufacture, including: sources & classification of the main fibre groups, fabrics & yarns, production processes associated with mixtures & blends, laminating as a finishing process	
	The qualities given to fabrics by the construction methods used, finishes and surface decoration, and through surface pattern technologies	
	The performance characteristics of fibres and fabrics including tensile strength, elasticity, resilience, durability, flammability, and weight	
	The applications of smart materials, e-textiles, and technical textiles	
	A variety of components and their appropriateness for a range of products in relation to the end-user, fabrics used, and design considerations	
	How materials, other than fibres & fabrics, can be used in textiles & fashion design & development	
	Industrial and commercial practice including manufacturing processes, the use of ICT, pattern cutting, product manufacture, re-use and recycling, production scales, testing systems, and quality control in relation to textiles and the fashion design industry	
	The use of pattern drafting & toiles	
Additional Specialist knowledge: Design Engineering	System design processes and methods	
	The use of 'blue sky' and incremental innovation, and of new/emerging technologies	
	The characteristics and working properties of materials relevant to engineering including smart and modern materials	
	Visualisation and simulation including the application of computer aided design (CAD) and computer aided engineering (CAE) software	
	The principles of electronics including sensing, control, and output systems	
	Static and dynamic forces in structures, including the forces of: tension, compression, torsion and bending; stress, strain and elasticity; rigidity and modes of failure	
	Mechanical systems	
	Energy sources, energy storage, transmission, and utilisation	
	Programmable and control devices including how to use such devices to solve problems in system design	
	How to represent systems and components through the use of circuit diagrams, flowcharts and constructional diagrams	

Additional Specialist knowledge: Design Engineering	How to develop and use production plans	
	Industrial & commercial practice including manufacturing processes & systems, the use of ICT, prototyping, product manufacture & maintenance, production scales, & quality control in relation to the engineering industries	
	How to interface electrical/electronic circuits with mechanical and pneumatic systems and components	
	Communication protocols, including an understanding of interfacing with wireless devices, embedded devices, & smart objects	
	How testing, including the use of destructive and non-destructive methods, is used to inform and modify designs	
	Product lifecycle management, engineered lifespans including planned obsolescence, the need for maintenance of machinery, product support, and end of life (EOL)	
	The prediction of performance through modelling, including the use of IT based tools	
Maths	Confident use of number and percentages	
	Calculation of surface areas and/or volumes	
	Use of ratios	
	Construction, use and/or analysis of graphs and charts	
	Use of coordinates and geometry	
	Use of trigonometry	
	Use of statistics and probability as a measure of likelihood	
Science	Use scientific laws - Newton's laws of motion, Hooke's law, Ohm's law as appropriate to the designed product (Design Engineering only)	
	Describe the conditions which cause degradation	
	Know the physical properties of materials and explain how these are related to their uses	