AQA
Realising potential

A-LEVEL
DESIGN AND TECHNOLOGY FASHION AND TEXTILES
(7562)

Specification
For teaching from September 2017 onwards
For exams in 2019 onwards

Version 1.2 21 January 2019

Contents

Are you using the latest version of this specification?

- You will always find the most up-to-date version of this specification on our website at aqa.org.uk/7562
- We will write to you if there are significant changes to the specification.

1 Introduction

1.1 Why choose AQA for A-level Design and Technology: Fashion and Textiles

This creative and thought-provoking qualification gives students the practical skills, theoretical knowledge and confidence to succeed in a number of careers. Especially those in the creative industries.

They will investigate historical, social, cultural, environmental and economic influences on design and technology, whilst enjoying opportunities to put their learning in to practice by producing prototype of their choice.

Students will gain a real understanding of what it means to be a designer, alongside the knowledge and skills sought by higher education and employers.

We're confident you'll find this specification clear and easy to use, as a number of teachers and assessment experts have helped us to produce it.

We've structured the content so that you can co-teach AS and A-level Design and Technology students, allowing for maximum flexibility in lesson timetabling and teaching resources.

You can find out about all our Design and Technology: Fashion and Textiles qualifications at aqa.org.uk/designandtechnology

1.2 Support and resources to help you teach

We've worked with experienced teachers to provide you with a range of resources that will help you confidently plan, teach and prepare for exams.

Teaching resources

Visit aqa.org.uk/7562 to see all our teaching resources. They include:

- teaching guidance and lesson plans to help you deliver this specification
- non-exam assessment example materials and a dedicated subject adviser for every school or college to help you understand our expectations for this part of the assessment
- sample schemes of work to help you plan your course with confidence
- textbooks tailored to our specification and approved by AQA
- training courses to help you deliver AQA Design and Technology qualifications for all teachers, from newly qualified teachers who are just getting started to experienced teachers looking for fresh inspiration.

Preparing for exams

Visit aqa.org.uk/7562 for everything you need to prepare for our exams, including:

- sample papers and mark schemes for new courses
- Exampro: a searchable bank of past AQA exam questions
- example student answers with examiner commentaries.

Analyse your students' results with Enhanced Results Analysis (ERA)

Find out which questions were the most challenging, how the results compare to previous years and where your students need to improve. ERA, our free online results analysis tool, will help you see where to focus your teaching. Register at aqa.org.uk/era

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Keep your skills up-to-date with professional development

Wherever you are in your career, there's always something new to learn. As well as subject specific training, we offer a range of courses to help boost your skills.

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2 Specification at a glance

This qualification is linear. Linear means that students will sit all their exams and submit all their non-exam assessment at the end of the course.

2.1 Subject content

1. Technical principles (page 10)
2. Designing and making principles (page 33)

2.2 Assessments

Paper 1
What's assessed Technical principles
How it's assessed • Written exam: 2.5 hours • 120 marks • 30% of A-level
Questions Mixture of short answer and extended response.

Paper 2

What's assessed

Designing and making principles

How it's assessed

- Written exam: 1.5 hours
- 80 marks
- 20% of A-level

Questions

Mixture of short answer and extended response questions

Section A

- Product analysis: 30 marks
- Up to 6 short answer questions based on visual stimulus of product(s).

Section B

- Commercial manufacture: 50 marks
- Mixture of short and extended response questions.

Non-exam assessment (NEA)

What's assessed

Practical application of core technical principles, core designing and making principles and additional specialist knowledge

How it's assessed

- Substantial design and make project
- 100 marks
- 50% of A-level

Evidence

Written or digital design portfolio and photographic evidence of final prototype.

3 Subject content

A-level Design and Technology: Fashion and Textiles requires students to engage in both practical and theoretical study. This specification requires students to cover design and technology skills and knowledge as set out below. These have been separated into:

- Technical principles
- Designing and making principles.

The specification content is presented in a two column format. The left hand column contains the specification content all students must cover, and forms the basis for the assessments. This column gives additional information to ensure students study the topic in appropriate depth and gives teachers the parameters in which the subject will be assessed.

Students should develop the ability to draw on and apply a range of skills and knowledge from other subject areas to inform their decisions in design and the application or development of technology. There are clear links between aspects of the specification content and other subject areas such as Computer Science (section 3.1.6 'The use of computer systems' and section 3.1.8 'Digital design and manufacture'); Business Studies (section 3.1.12 'Enterprise and marketing in the development of products; Art and Design (section 3.1.13 'Design communication') and History (section 3.2.2 'Design theory') This is not an exhaustive list, and there are other opportunities within the specification for students to integrate and apply their wider learning and understanding from other subject areas studied during Key Stage 4, as well as those subjects that they are studying alongside A-level Design and Technology.

Students must also demonstrate maths and science skills. The right hand column throughout subject content illustrates potential links where maths and science skills and knowledge can be applied in the context of design and technology. These are examples of where these skills can be applied and are not intended to be exhaustive.

The maths and science skills and knowledge as required by the DfE are set out in Appendix 1: Links to maths and science (page 69).

3.1 Technical principles

3.1.1 Materials and their applications

Materials and applications

Content	Potential links to maths and science
Students are expected to be able to name specific materials for a wide range of applications. They must also be able to provide detailed and justified explanations of why specific materials and combinations of materials are suitable for given applications with reference to: • physical and mechanical properties and working characteristics • product function • aesthetics • cost • manufacture and disposal.	Understand the appropriate use of textile materials based on their physical and working characteristics such as: • thermal insulation • ability to reflect light • thermoplasticity • flammability • ability to absorb moisture • development of static electricity. Calculation of quantities of materials sizes and costs.

Classification of materials

Content	Potential links to maths and science

Students must know the classifications of the following fibres, and be able to name examples that belong to each category:
• natural fibres:
  • natural plant/cellulosic fibres – cotton, linen, ramie
  • natural animal/protein fibres – wool, silk
  • hair fibres – cashmere, mohair, angora
• manufactured fibres:
  • regenerated fibres – viscose, acetate
  • new generation lyocells – Modal®, Tencel®, Lyocell®
• synthetic fibres:
  • polyamide (nylon), polyester, acrylic, elastomeric
  • chlorofibres (polyvinyl), fluorofibres (PTFE)
  • aramid fibres (Kevlar®, Nomex®)
  • inorganic fibres including glass, carbon, metallic, ceramic
• smart materials:
  • reactive materials
  • photochromic dyes
  • phase changing materials
• modern materials:
  • microfibres
  • nano-fibres
  • microencapsulated fibres and fabric.	

Methods for investigating and testing materials

Content	Potential links to maths and science
Students must understand how workshop and industrial tests are set up and what will be tested, measured and compared, including: • flammability • crease resistance • shrink resistance • colour fastness • strength • pilling.	Analysis of data obtained from testing.

3.1.2 Performance characteristics of materials

Performance characteristics of fibres

Content	Potential links to maths and science
Students should be able to name different types of fibres. Students should be able to describe the performance characteristics of fibres, including: • absorbency • strength • elasticity • flammability • thermal qualities • lustre • handle. Students should be able to explain the different fibres and their specific performance characteristics, including: • plant/cellulose fibres: very absorbent, little elasticity, good strength, poor insulators • animal/protein fibres: very absorbent, thermally insulating • regenerated fibres: poor strength, soft, highly absorbent, crease badly • new generation lyocells: with improved performance characteristics • synthetic fibres: very good strength, totally non-absorbent, smooth, lightweight, do not crease, can be heat set (thermoplastic). Students should be able to explain the shape and formation of fibres. They should understand and be able to discuss the different cross-sectional and linear formation of fibres that can occur in natural form, and those that can be engineered during synthetic and manmade fibre production.	Understand how the physical shape and formation of fibres affect their performance.

Content	Potential links to maths and science
Fibre production. Students should be aware of, and be able to describe, the manufacturing processes used to make fibres in relation to the fibre source. With specific reference to staple fibres and continuous filament fibres, students should be able to demonstrate a knowledge of: • wet spinning of regenerated fibres • melt spinning of synthetic fibres to give very fine, smooth continuous filaments.	Understand how fibre production can affect the fibre formation.
Yarn production. Students should be aware of, and be able to describe, the manufacture of staple and filament yarns, single and plied yarns.	
Mixture and blends. Students should know of the need to blend fibres to create aesthetic effects, performance fabrics, improved care and maintenance of fabrics. Students should be aware of, and be able to describe, the production processes associated with mixtures and blends, including: • the mechanics of blending different fibres together • how fibres are combined together to make yarns, eg stable fibre blends and multi-filament yarns • yarns made from mixes of staple fibres and filament fibres cut down to staple form • the different methods of core-spinning yarns which include elastomeric fibres • fibre content of typical blends.	
Hand and machine knitted methods. Students should be aware of, and be able to describe, the production processes associated with hand and machine knitting, including: • panel knitting • fully fashioned panels • whole garment knitting.	

Content	Potential links to maths and science
Non-woven fabrics. Students should be aware of, and be able to describe, the production processes associated with non-woven fabrics, including: • felts, adhesive and heat bonded • needle-felt.	
Special woven effects. Students should be aware of, and be able to describe, the production processes associated with woven effects with coloured yarns, including: • checks and stripes including gingham, tartan, madras.	
Effects created using fibres and yarns. Students should be aware of, and be able to describe, the effects that can be created, including: • bouclé and crêpe fabrics • crinkle and permanent creasing • metallic fibres • use of dyes to give multicoloured fabric • use of thermoplastic fibres.	

Performance characteristics of yarns

Content	Potential links to maths and science
Students should know that fibres need to be made into yarns before they can be manufactured into woven and knitted fabrics. Students should be able to explain the performance characteristics of yarns, including: • the importance of twist in relation to strength and bulk of the yarn: the importance of this in the making of crêpe yarns and fabrics • technical terms relating to yarns: systems for numbering yarns, eg tex and denier staple and filament yarns. Students should be able to describe the main yarn types, including: • textured yarns: false twist and air jet texturising processes, why yarns need to be textured, the importance of thermoplastic qualities in the texturing process • fancy yarns: bouclé, slub, chenille, metallised yarns.	

Performance characteristics of woven fabrics

Content	Potential links to maths and science
Students should be able to explain the main fabric structures of woven fabrics and be able to recognise these structures and typical end uses for a range of woven fabrics, including: • plain (tabby) weave fabrics: broderie anglaise, calico, canvas, chambray, chiffon, flannel, muslin, organdie, poplin, sheeting, shirting, taffeta, voile, winceyette • twill weave fabrics: cavalry twill, denim, dog-tooth check, drill, gabardine, herringbone tweeds, serge, tartan • satin weave fabrics: satin, sateen, duchesse satin, heavy bridal satins, lighter weight satins for linings and lingerie • brocades and Jacquard • three yarn system weaves: cut pile fabrics, including velvet, needlecord, corduroy, loop pile fabrics, including terry towelling.	

Performance characteristics of knitted fabrics

Content	Potential links to maths and science
Students should be able to explain the two main structures of knitted fabrics and be able to recognise these structures and typical end uses for a range of knitted fabrics, including: • weft knits: hand and machine knits, plain knit, single jersey, double jersey, rib knits, jacquard knits • warp knits: net and lace structures.	

Performance characteristics of non-woven fabrics

Content	Potential links to maths and science
Students should be able to understand and explain that non-woven fabrics are produced directly from fibres and have knowledge of typical end uses of non-woven fabrics.	

Smart materials

Content	Potential links to maths and science
Students should know and understand the term smart material. The effects that can be created by a range of smart materials and have knowledge of specific applications, eg in relation to fabrics for safety and novelty products. Students should be able to explain the suitability of smart materials for given applications making reference to how the material responds to external stimuli, including: • changes in temperature • changes in light levels • changes in pressure (force).	

Technical textiles

Content	Potential links to maths and science
Students should know and understand the term technical textiles. Students should be able to explain the suitability of technical textiles for given applications. Students should be familiar with the following technical textiles: • phosphorescent materials, microencapsulated fibres and fabrics • ceramic and carbon fibres used in the production of nano-fibres • ceramic fibres to give a fabric UV protection properties.	

Commercial names of fibres and fabrics

Content	Potential links to maths and science
Students should be able to name and describe popular names of natural, man-made and synthetic fibres and fabrics, including: • Tactel® • Lyocell® • Modal® • Tencel® • Lycra® • Polar fleece.	

Performance characteristics of fabrics

Content	Potential links to maths and science
Students should be able to explain the performance characteristics of fabrics, including: • strength • durability • elasticity • flammability • thermal qualities • absorption • water-resistance • stretch • formability • handle • drape • weight • rip-proof. Students should be able to explain the following terms, and how they relate to particular fabrics: • pattern repeat • directional pile • nap • texture • lustre. Students should be able to describe and explain the following, and how they relate to particular fabrics and their uses: • woven fabrics have relatively good strength and stability • non-woven fabrics lack strength and have no grain • knitted fabrics have fluidity and stretch • a nap, or pile, reflects light in different ways • size of pattern repeat in relation to the appearance of a product.	Understand how the physical structure of fabrics affects performance. Understand that environmental factors can cause potential degradation of fabrics, eg with reference to colour fastness, weakening by sunlight and chlorine, inappropriate care routines.

Content	Potential links to maths and science
Students should know and understand how the properties of fabrics and their physical characteristics relate to their selection for specific fashion, clothing and textile products. This should include reference to both fabric construction and fibre/yarn content and the inter-relationship between them in determining the overall characteristic of a fabric. Properties and physical characteristics to include: • tensile strength • elasticity • resilience • durability • flammability • weight.	

3.1.3 Methods of joining and use of components

Seams

Content	Potential links to maths and science
Different seam types and their selection and use on different products taking into account the fabric type, effect to be achieved, efficiency of manufacture and after care of product. Students should have knowledge of the specific techniques required when working with different fabric types, eg knitted, checked, stretch, directional, sheer and patterned fabrics.	

Threads

Content	Potential links to maths and science
Including sewing threads, embroidery threads, and special effect threads: • sewing threads: eg polyester and cotton machine thread, buttonhole thread • embroidery threads: eg stranded embroidery, madeira/viscose machine embroidery • special effect threads: eg metallic, glow-in-the-dark, multicoloured.	

Fusible fleece

Content	Potential links to maths and science
The use of heat-sensitive fleece such as Bondaweb ® when joining layers of fabric, eg in applique work.	

The use of fastenings

Content	Potential links to maths and science
The use of fastenings including buttons and buttonholes and loops, zips, poppers, clips, buckles, clasps, Velcro, D-rings, hooks and eyes, fabric and ribbon ties. Selection and application of fastenings for a range of fashion, clothing and textile products taking account of the intended use, fabric type, the effect to be achieved, efficiency of manufacture and after care of product. Students should have an awareness of the different types of fastening within each category, eg open-ended and invisible zips, flat and domed buttons.	

Trims

Content	Potential links to maths and science
• Braids. • Ribbons. • Piping. • Edging. • Bindings. • Fringing. • Lace. • Beads. • Diamantés.	

Components and their appropriateness for a range of products

Content	Potential links to maths and science
Selection of the most appropriate component for a product taking into consideration the style, effect, fabric used, manufacturing considerations, safety in relation to user, availability and cost implications.	

Interfacings, underlinings, linings, interlinings

Content	Potential links to maths and science
Types and applications in relation to fabric weight and construction, and end use of product. Students should have knowledge of the different fabrics used and the reasons for choice in relation to specific products.	

3.1.4 The use of finishes

Fabric finishes

Content	Potential links to maths and science
The effects of finishes and the reasons they are needed in relation to: • the fibre/fabric properties • end use of the product.	

Mechanical finishes

Content	Potential links to maths and science
A range of mechanical finishes, including: • brushing/raising • calendaring • embossing • heat setting using thermoplastic fibres to give permanent pleats or crinkles and make fabric non-crease and non-shrink • stone and sand washing.	Understand how the physical characteristics of fabrics can be modified by using mechanical finishes, eg trapped air acts as an insulator, air supports combustion, smooth fabric reflect light better than those with texture.

Chemical finishes

Content	Potential links to maths and science
A range of chemical finishes, including: • mercerisation • flame retardancy, eg Proban® and Pytovatex® used on cotton fabrics • water resistance • non-iron/crease resistance, eg Teflon • shrink resistance and anti felting • moth proofing • anti-pilling • hygienic (sanitised). Detailed knowledge of the chemicals involved and methods of application is not expected.	Understand how the physical characteristics of fabrics can be modified by applying chemical finishes.

Laminating as a finishing process

Content	Potential links to maths and science
That a laminated fabric is a membrane system made up of two or more layers, and the principles behind how laminated fabrics work. Students should be able to describe a range of laminated fabrics, including: • Gore-Tex® • Sympatex® • Bonded fabrics, eg fake leather backed by a woven fabric to give stability.	

3.1.5 Enhancement of materials

Content	Potential links to maths and science
Surface decoration – dyeing. Students should be aware of, and be able to describe, dyeing as a surface decoration, including: • vat, discharge and resist, eg tie-dye, batik • when dye is applied in relation to fibres, yarns, fabrics and finished products • the different types of dye fastness required in fashion clothing and textile products, eg fastness to washing, light, perspiration, rubbing and chlorine • dyeing in response to consumer demand and seasonal trends.	Understand the principles behind discharge and resist dyeing. Understand the degradation of fabrics in relation to colour fastness.
Surface decoration – printing. Students should be aware of, and be able to describe, the steps that need to be taken in preparing a fabric for printing, including: • desizing • scouring • bleaching. Students should be aware of, and be able to describe, printing as a surface decoration, including: • direct • discharge • hand (block and stencil) • rotary/flat bed screen printing • transfer • digital printing • dye sublimation.	
Embroidery. Students should be aware of, and be able to describe, a range of hand and machine embroidery stitches.	

Content	Potential links to maths and science
Quilting. Students should be aware of, and be able to describe, the construction of quilted fabrics and reasons for their use.	Understand the effects of trapped air on thermal insulation.

3.1.6 Modern industrial and commercial practice

Content	Potential links to maths and science
Scales of production. Students should be aware of, and be able to describe, the different scales of production giving example products and specific manufacturing methods. Specific scales of production to include: • one-off, bespoke • batch production • mass/line production • unit production systems (UPS) • quick response manufacturing (QRM) • section • vertical in-house production.	
The use of computer systems. Students should be aware of how computer systems are used to plan and control manufacturing, reduce waste and respond quickly to changes in consumer demand. Students should be able to explain the use of computer controlled systems in production, distribution and storage. Students should be able to explain the use of standardised and bought-in components made by specialist manufacturers.	
Sub-assembly. Sub-assembly as a separate line of manufacture for certain parts of a product.	

Content	Potential links to maths and science
Global production. Students should be aware of and able to explain the positive and negative impacts of global production, including: • offshore production • imports and exports • branded goods • contracted goods.	

3.1.7 Digital design and manufacture

Computer aided design (CAD)

Content	Potential links to maths and science
• The advantages and disadvantages of using CAD compared to manually generated alternative. • The use of CAD to develop and present ideas for products. • How CAD is used in industrial applications.	Use of datum points and geometry when setting out design drawings. The use of tolerances in dimensioning.

Computer aided manufacturing (CAM)

Content	Potential links to maths and science
Students should be aware of, and be able to describe, how CAM is used in the manufacture of products. Specific processes to include: • fabric manufacture • fabric printing • lay planning and computer controlled cutting • automated buttonholing • making and sewing of pockets • seam stitching • pressing • computer controlled decorative processes • laser cutting.	Calculating speeds and times for machining.

Virtual modelling

Content	Potential links to maths and science
Students should be aware of, and be able to describe, how virtual modelling/testing is used in industry prior to product production. Specific processes to include: • simulation • pattern design systems • computer controlled printing to produce sample fabric lengths.	

Electronic data interchange

Content	Potential links to maths and science
Students should be aware of, and able to describe, the use of electronic point of sales (EPOS) for marketing purposes and the collection of market research data.	

Production, planning and control (PPC) networking

Content	Potential links to maths and science
Students should be aware of, and able to describe, the role of PPC systems in the planning and controlling of all aspects of manufacturing, including: • availability of materials • scheduling of machines and people • coordinating suppliers and customers.	

3.1.8 The requirements for textile and fashion design and development

Content	Potential links to maths and science
Product development and improvement. Through the study and critical analysis of existing products students should develop and understanding of the requirements of the following: • the design, development and manufacture of fashion clothing and textiles products to meet specification criteria • fitness for purpose • accuracy of production • how the critical assessment of products can lead to the development of new designs. Students should develop the skills to critically assess products and develop new design proposals. Students should develop their ability to work with a variety of materials, including two- and three-dimensional forms, to produce creative and original products which satisfy the demands of the target market, and consider accurate and efficient manufacture. When designing products/prototypes students should consider aesthetics, ergonomics and anthropometrics.	
Inclusive design. Students should be aware of, and be able to explain, the development of products that are inclusive in their design so that they can be used by a wide range of users including the disabled, children, the elderly, transgender people and gender non-conformists.	

3.1.9 Health and safety

Content	Potential links to maths and science
Safe working practices: • knowledge of the Health and Safety at Work Act (1974), and how it influences the safe manufacture of textile products • control of Substances Hazardous to Health (COSHH) and safety precautions that should be taken with relevant materials • safe working practices and identifying potential hazards for the school or college workshop and industrial contexts • safety precautions that should be taken with specific manufacturing processes • the concept of risk assessment and its application to given manufacturing processes.	Understand why some materials, adhesives and finishes are hazards.

Safety in products and services to the customer.
Students should be aware of, and able to explain, how designers and manufacturers ensure products are safe for consumers to use, including:
• legislation used to protect consumers and its impact on product design, eg Consumer Rights Act (2015), Sales of Goods Act (1979), specifically including the requirements that relate to children's clothing
• the British Standards Institute (BSI), and how specific products might be tested to meet safety standards
• measures to ensure the safety of toys, eg Lion Mark
• advice to consumers:
  • manufacturer's instructions
  • safety warnings
  • aftercare advice including care labelling.	

3.1.10 Protecting designs and intellectual property

Content	Potential links to maths and science
Students should be aware of, and able to explain, the importance of the following to the designer: • copyright and design rights • patents • registered designs • trademarks • logos.	

3.1.11 Design for manufacturing, maintenance, repair and disposal

Manufacture, repair, maintenance and disposal

Content	Potential links to maths and science
The need to modify designs to make them more efficient to manufacture, including: • reducing the number of manufacturing processes • how the choice of materials affects the use, care and disposal of products: advisory labelling to encourage responsible use and care of textile products • application of the six Rs of sustainability: reduce the quantity of materials, of toxic materials, of damaging materials and associated energy use, reuse components and parts, rethink by using eco friendly alternative materials, recycle materials and/or components into new products • maintenance: temporary and integral fixings, use of standardised parts, allowing for service and repair/ replacement of parts, ability to upgrade with software downloads, selection of fabrics and components that can be cared for without the need for special treatments, advisory labelling to encourage responsible washing and drying of textile products.	

Care and maintenance of products

Content	Potential links to maths and science
Students should be aware of, and able to explain, the different ways in which a product can be cared for and maintained, including care labels, their use and what they mean.	Understand the relationship between care recommendations and fibre/fabric properties, eg the thermoplastic nature of synthetic fibres and wash/iron temperatures, shrinkage of wool fibres when washed at high temperatures and with excessive mechanical action.

3.1.12 Feasibility studies

Content	Potential links to maths and science
The use of feasibility studies to assess the practicality for production of proposed designs, including the testing of prototypes with potential consumers.	Interpret statistical analyses to determine user needs and preferences. Use data related to human scale and proportion to determine product scale and dimensions.

3.1.13 Enterprise and marketing in the development of products

Enterprise and marketing

Content	Potential links to maths and science
The importance of marketing and brand identity, including: • customer identification • labelling • packaging • corporate identification • concept of global marketing: the promotion and advertisement of products including the use of new technologies, eg social media, viral marketing • product costing and profit • awareness of the role of entrepreneurs. The collaborative working of designers in the development of new and innovative fashion, clothing and textile products. Factors affecting product price, including: • costs • profit margin • target market • budget.	Interpretation of market research data, calculating costs and profit.

Fashion cycles

Content	Potential links to maths and science
The sales and marketing cycles for specific product groups, including: • fad • classic • standard. The impact of fashion on trend and the development of design products, including: • retro • vintage • industrial • traditional. Industry development cycles, including: • colour trends • fibre trends • predictions • the importance and purpose of trade fairs. The influence of trend and changes in lifestyle on fashion, clothing and textile products.	

3.1.14 Design communication

Content	Potential links to maths and science
A range of communication and presentation techniques for conveying design proposals to clients, potential users and manufacturers, including: • report writing • the use of graphs • tables and charts • 2D/3D sketching • the use of mixed media and rendering to enhance drawings • dimensioning and details for manufacture.	Scaling drawings. Use of datum points and geometry when setting out design drawings. Representation of data used to inform design decisions and evaluation of outcomes. Presentation of market data, user preferences and outcomes of market research.

3.2 Designing and making principles

3.2.1 Design methods and processes

Content	Potential links to maths and science
Iterative design process. Different approaches to user centred design. That in approaching a design challenge there is not a single process, but that good design always addresses many issues, including: • designing to meet a need • investigations to inform the use of primary and secondary data including market research, interviews, human factors, focus groups, product analysis and evaluation, the use of anthropometric data and percentiles, the use of ergonomic data • the development of a design proposal • the planning and manufacture of a prototype solution • the evaluation of a prototype solution to inform further development.	Representation of data used to inform design decisions and evaluation of outcomes. The use of ergonomic and anthropometric data when designing products for humans and specific applications.

3.2.2 Design theory

Content	Potential links to maths and science
Design influences. How key historical design styles, design movements and influential designers that helped to shape fashion and textile design and manufacture.	
Design styles and movements. Key design styles and movements and their principles of design, including: • Art Nouveau • Art Deco • Pop-art • Minimalism • Punk.	

Content	Potential links to maths and science
Designers and their work. The work of influential designers and how their work represents the principles of different design movements, including: • Paul Poiret • Chanel • Dior • Mary Quant • Yves St Laurent • Pierre Cardin • Vivienne Westwood • McQueen.	

3.2.3 How technology and cultural changes can impact on the work of designers

Socioeconomic influences

Content	Potential links to maths and science
Socioeconomic influences have helped to shape product design and manufacture, including: • trends • street culture music and media • world events, eg WW1, WW2 • the rise of youth culture and anti-authoritarian attitudes • the influence of workwear garments on fashion • the role of women in society • sport and leisure • technological developments • music, film, royalty and celebrities.	

Major developments in technology

Content	Potential links to maths and science
How major developments in technology are shaping product design and manufacture, including: • the introduction of regenerated and synthetic fibres during the 20th century • the development of fabric finishes, e-textiles and smart materials • new methods of manufacturing clothing and textile materials including mass production as opposed to bespoke, automated manufacturing including CAD and CAM • new decorative techniques such as laser printing • development in the care of textiles.	An awareness of scientific advancements/ discoveries and their potential development.

Product life cycle

Content	Potential links to maths and science
The stages of the product life cycle, including: • design introduction • evolution • growth • maturity • decline • replacement. Students should be able illustrate their understanding with examples of how, with reference to specific products, designers have refined and redeveloped products.	

Social, moral and ethical issues

Content	Potential links to maths and science
The responsibilities of designers and manufacturers, including: • products are made using sustainable materials and ethical production methods • the development of products that are culturally acceptable, not offensive to people of different race, gender or religious belief • the development of products that are inclusive • the design and manufacture of products that could assist with social problems, eg poverty, health and wellbeing, migration and housing • the impact of Fairtrade on design and consumer demand • designing products to consider the six Rs of sustainability • the concept of upcycling.	

3.2.4 Design processes

Content	Potential links to maths and science
The stages of a range of design processes in order to apply personal judgement and relevant criteria in the appraisal of products and systems, including: • investigations and analysis • use of inspiration materials, eg mood boards • ideas generation • illustration • modelling • planning • evaluating and testing.	

Content	Potential links to maths and science

Prototype development.
 	
Students should be aware of, and able to discuss and demonstrate, the development of a prototype from design proposals.
 	
This knowledge should influence the development of design ideas for the NEA so that students may make high quality products the meet the needs of identified users.
 	
Students should have knowledge and experience of:
• basic pattern/template drafting, knowledge and use of technical terms, including:
  • basic block
  • labelling
  • notching
  • balance marks
  • seam allowance
• be able to work from a set of basic block patterns, developed from individual measurements or from commercial basic block, including:
  • bodice front and back
  • sleeve, skirt and trouser front and back
• basic adaptations to create unique and individual styles:
  • manipulation of the basic templates to develop patterns as required
  • moving of darts and seams to create new fullness
  • shaping or creating yokes
• use of toiles: how toiles are used to test and develop fashion and clothing products and pattern templates.
	The use of mathematics in developing pattern templates

The iterative design process in industrial or commercial contexts. How different design methodologies are used by designers in the corporate world when designing products including collaborative working and the cyclic nature of commercial design and manufacture.	

3.2.5 Critical analysis and evaluation

Content	Potential links to maths and science
Critical analysis and evaluation. Students should be aware of, and able to discuss, their own and commercial products leading to possible improvements/modifications of the original idea.	
Testing and evaluating products in commercial products. How products are required to undergo rigorous testing, and the testing methods used, before they become commercially available for sale.	
Use of third party feedback in the testing and evaluation process. How the use of feedback and testing informs the evaluation process, including: • informing future modification and development • the importance of ensuring the views of other interested parties are sought in order to have objective and unbiased feedback.	

3.2.6 Selecting appropriate tools, equipment and processes

Content	Potential links to maths and science
Good and safe working practices, including: • the importance of using the correct tools and equipment for specific tasks • the importance of ensuring their own safety and that of others when in a workshop situation • how designs are developed from a single prototype into mass produced products • the effect on the manufacturing process that is brought about by the need for batch and mass manufacture • how to select the most appropriate manufacturing process to be able to realise theirs, or others' design proposals • the importance of health and safety in a commercial setting including workforce training and national safety standards.	

3.2.7 Accuracy in design and manufacture

Content	Potential links to maths and science
Measuring and marking out. The importance of accuracy in manufacturing, whatever the scale of production, including: • how testing can eliminate errors • the value in the use of measuring aids, eg templates, in ensuring consistency of accuracy and the reduction of possible human error.	Determining quantities of materials. Calculation of sides and angles of products. Use of datum points and geometry when setting out design drawings. Use of geometry to create templates for designs.

3.2.8 Responsible design

Environmental issues

Content	Potential links to maths and science
The importance of 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 sourcing textile materials, their use and care on the environment • the environmental impact of packaging textile products, eg use of excessive packaging and plastic.	Templates for designs.

Conservation of energy and resources

Content	Potential links to maths and science
The concept of a circular economy, including: • how products are designed to conserve energy, materials and components • the design of fashion, clothing and textiles 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.	

3.2.9 Design for manufacture and project management

Content	Potential links to maths and science
Planning for accuracy and efficiency. The importance of planning for accuracy when making prototypes and making recommendations for small, medium and large scale production.	Calculations based on economies of scale. The impact of one way designs, nap and pattern on fabric layouts.
Quality assurance. 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), and how they are applied to specific examples in fashion, clothing and textiles manufacture, including critical path analysis, scrum or six sigma.	

Content	Potential links to maths and science
Quality control. The monitoring, checking and testing of materials, components, equipment and products throughout production to ensure they conform to acceptable tolerances. Product sampling. Quick response manufacturing teams and quality circles. Automated equipment to check for faults in fabrics. Labelling and quality assurance symbols, eg wool mark, 100% cotton logo, Tencel® logo, Teflon® fabric finish logo. Quality control standards as laid down by BSI and voluntary codes of practice.	

3.2.10 National and international standards in product design

Content	Potential links to maths and science
Relevant national and international standards. Students should be aware of, and able to discuss, the importance of national and international standards in product design, including: • the four areas to be considered when labelling a garment: fibre content, country of origin, care instructions, flammability • British Standards Institute (BSI): performance codes in relation to the selection of materials for a range of end users • International Organisation for Standardisation (ISO). • the European Eco label • packaging directives.	

4 Scheme of assessment

Find past papers and mark schemes, and specimen papers for new courses, on our website at aqa.org.uk/pastpapers

This specification is designed to be taken over two years.

This is a linear qualification. In order to achieve the award, students must complete all assessments at the end of the course and in the same series.

A-level exams and certification for this specification are available for the first time in May/June 2019 and then every May/June for the life of the specification.

All materials are available in English only.

Our A-level exams in Design and Technology: Fashion and Textiles include questions that allow students to demonstrate their ability to:

- recall information
- draw together information from different areas of the specification
- apply their knowledge and understanding in practical and theoretical contexts

4.1 Aims

Courses based on this specification must encourage students to:

- 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
- gain an insight into the creative, engineering and/or manufacturing industries
- develop the capacity to think creatively, innovatively and critically through focused research and the exploration of design opportunities arising from the needs, wants and values of users and clients
- develop knowledge and experience of real world contexts for design and technological activity
- develop an in-depth knowledge and understanding of materials, components and processes associated with the creation of products that can be tested and evaluated in use
- 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
- be able to create and analyse a design concept and use a range of skills and knowledge from other subject areas, including maths and science, to inform decisions in design and 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 and apply a range of skills and knowledge from other subject areas, including the use of maths and science for analysis and informing decisions in design.

4.2 Assessment objectives

Assessment objectives (AOs) are set by Ofqual and are the same across all A-level Design and Technology: Fashion and Textiles specifications and all exam boards.

The exams and non-exam assessment will measure how students have achieved the following assessment objectives.

- AO1: Identify, investigate and outline design possibilities to address needs and wants.
- AO2: Design and make prototypes that are fit for purpose.
- AO3: Analyse and evaluate:
  - design decisions and outcomes, including for prototypes made by themselves and others
  - wider issues in design and technology.
- AO4: Demonstrate and apply knowledge and understanding of:
  - technical principles
  - designing and making principles.

4.2.1 Assessment objective weightings for A-level Design and Technology: Fashion and Textiles

Assessment objectives (AOs)	Component weightings			Overall weighting
	Paper 1	Paper 2	NEA	
AO1			15	15
AO2			25	25
AO3	7.5	7.5	10	25
AO4	22.5	12.5		35
Overall weighting of components	30	20	50	100

4.3 Assessment weightings

The marks awarded on the papers will be scaled to meet the weighting of the components. Students' final marks will be calculated by adding together the scaled marks for each component. Grade boundaries will be set using this total scaled mark. The scaling and total scaled marks are shown in the table below.

Component	Maximum raw mark	Scaling factor	Maximum scaled mark
Paper 1	120	x1	120
Paper 2	80	x1	80
NEA	100	x2	200
		Total scaled mark:	400

4.4 Non-exam assessment criteria

4.4.1 Setting the task

Students will be required to undertake a substantial design and make task and produce a final prototype based on a context and design brief developed by the student.

4.4.2 Taking the task

With reference to the context, students will develop a specific brief that meets the needs of a user, client or market.

The brief must be of an appropriate level of complexity and contain a degree of uncertainty of the outcome so that students can engage in an iterative process of designing, making, testing and evaluating.

Students must produce a final prototype based on the design brief they have developed, along with a written or digital design folder or portfolio.

Students must produce a written or digital design folder clearly evidencing how the assessment criteria have been met together with photographic evidence of the final manufactured prototype outcome.

4.4.2.1 Evidence

Students must produce a written or digital design folder clearly evidencing how the assessment criteria have been met together with photographic evidence of the final manufactured prototype outcome.

Students should produce a concise folder. We recommend that this folder should not exceed 45 pages.

Students who do not follow these guidelines will penalise themselves by not meeting the expectations of the assessment appropriately. Students that exceed the recommended length will self-penalise by not being appropriately focused on the demands of the task.

Students that produce work that is shorter than the recommended page count will self-penalise by not allowing appropriate coverage of the assessment objectives.

4.4.2.2 Time limits

Learning hours are not specified because the process of producing the design portfolio is iterative and undertaken independently, while the final prototype is manufactured under immediate guidance or supervision in school/college. Where specialist processes or equipment are required beyond the school/college capabilities they may be utilised but must be documented in the Candidate Record Form (CRF).

We expect students to be selective in their choice of material to include, and to manage their time appropriately.

4.4.3 Marking the task

Five criteria are produced for assessment. Each band should be viewed holistically when making assessments. Students who produce no work for a criterion, or who produce work below that of A level standard, should be awarded a mark of zero.

The criteria should not be viewed as a linear process to be followed in a step-by-step manner. Rather students should be encouraged to cross reference the criteria throughout, and assessors encouraged to award marks where they are deserved and can be evidenced.

4.4.4 Guidance on applying the marking critieria

Level of response marking instructions are broken down into mark bands, each of which has a descriptor. The descriptor for the mark band shows the average performance for the level required. Before you apply the mark scheme to a student's project, review both the prototype and portfolio and annotate/make notes on it to show the qualities that are being looked for. You can then apply the marking criteria. Start at the lowest band of the marking criteria and use it as a ladder to see whether the work meets the descriptor for that band. The descriptor for the band indicates the different qualities that might be seen in the student's work for that level. If it meets descriptors for the lowest band then go to the next one and decide if it meets this, and so on, until you have a match between the band descriptor and the student's work. You can compare your student's work with the standardisation examples to determine if it is the same standard, better or worse. When assigning a level you should look at the overall quality of the work. If the project covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the work to help decide the mark within the band.

To select the most appropriate mark in the band descriptor, teachers should use the following guidance to locate the best fit:

- where the student's work fully meets all statements, the highest mark should be awarded
- where the student's work mostly meets all statements, the most appropriate mark in the middle of the range should be awarded
- where the student's work just meets the majority of statements, the lowest mark should be awarded.

There will be instances where a student fully meets for example 3/4 statements but only just meets the other. In this scenario a best fit approach should be taken. If, in this scenario, the range of marks within the band was 16–20, then a mark of 18/19 would be appropriate.

4.4.5 Feedback

Students are free to revise and redraft a piece of work before submitting the final piece for assessment. You can review draft work and provide **generic feedback** to ensure that the work is appropriately focussed. In providing generic feedback you **can**:

- provide feedback in oral and/or written form
- advise on resources that could be used
- remind students of the key sections that should be included in their final folder.

In providing generic feedback you **cannot**:

- correct a student's work
- provide templates, model answers or writing frames
- provide specific feedback to students on how to improve their projects to meet the requirements of the marking criteria
- provide feedback where a student has produced an incomplete stage and this is sufficient to allow progression to the next stage. If such support is given to students, then this must be recorded on the Candidate Record Form (CRF) and the students mark should be adjusted accordingly.

Whilst students may be guided in general terms, the final outcome must remain their own. Advice can be used to evaluate progress to date. A clear distinction must be drawn between providing

feedback to students as part of work in progress and reviewing work once it has been submitted by the student for final assessment.

Once work is submitted for final assessment it cannot be revised. It is not acceptable for you to give, either to individual students or to groups, feedback and suggestions as to how the work may be improved in order to meet the marking criteria.

In accordance with the JCQ Instructions for conducting NEAs, any support or feedback given to individual students which has not been provided to the class as a whole must be clearly recorded on the CRF and the student's mark must be appropriately adjusted to represent the student's unaided achievement.

4.5 Assessment criteria

	Section	Criteria	Maximun marks
AO1 (30 marks) **Identify, investigate & outline design possibilities**	A	Identifying and investigating design possibilities	20
	B	Producing a design brief and specification	10
A02 (50 marks) **Design & make prototypes that are fit for purpose**	C	Development of design proposal(s)	25
	D	Development of design prototype(s)	25
A03 (20 marks) **Analyse & evaluate**	E	Analysing and evaluating	20

4.5.1 Section A: Identify and investigate design possibilities

Central to the success of the NEA is the selection, by the student, of a context that will provide them with the opportunity to challenge themselves as a designer. Care should be taken, and guidance sought, to ensure that the context chosen offers the student the scope and complexity for a piece of work that is worthy of consideration for the award of an A-level.

Having chosen their context and potential user(s) they then need to plan and carry out an extensive investigation into all aspects of the context in order that they might operate from a position of knowledge when making subsequent decisions.

The student will be expected to employ a variety of both primary and secondary methods of investigation. These might include visits organised by themselves or others, surveys and questionnaires could be used to inform. Useful and relevant material can be gained from others via the internet, books, magazines or interviews. Students should also be encouraged to undertake, where relevant, practical experimentation and disassembly as methods for further understanding and exploring the context and its related issues.

At this stage it is expected that the student will begin to explore their thinking on possible solutions by producing concept ideas that take into account the information collected. At this stage of the process these first concept ideas will merely demonstrate the student's initial thinking and should

serve to stimulate later more considered thoughts regarding their design proposal(s) and design prototype(s).

It should be noted that it is not expected that the assessment criteria be seen as a linear process and that aspects from this, and other assessment criteria, might be present throughout the student's portfolio. Wherever it takes place, it is expected that this work will be rewarded.

Mark	Description
16–20	• Excellent rationale provided for the context selected, with continuous reference throughout the project to the end user and the constraints that need to be considered in formulating a final solution. • Student employs a comprehensive range of strategies and techniques, including both primary and secondary methods of investigation, practical experimentation and disassembly, to thoroughly explore design opportunities. All sources have been fully referenced. • First concepts are both fully relevant to the context and feasible for further development and are clearly communicated through a fully appropriate variety of methods and techniques. • All investigations relate directly to the design context, issues are identified and fully addressed and the student demonstrates a detailed and perceptive understanding of the information gathered.
11–15	• Good rationale provided for the context selected with clear reference to the end user and the constraints that need to be considered in formulating a final solution. • Student employs a broad range of strategies and techniques, which may include primary and secondary methods of investigation and/or practical experimentation to explore design opportunities. Most sources have been fully referenced. • First concepts are mostly relevant to the context and feasible for further development and are communicated through a variety of methods and techniques which are mostly appropriate. • Most investigations relate directly to the design context, issues are identified and addressed and the student demonstrates a good understanding of the information gathered.

Mark	Description
6–10	• Adequate rationale is provided but lacks focus for the context selected with some reference to the end user and consideration of the constraints in formulating a final solution which may lack clarity. • Student employs a limited range of strategies and techniques, which may include some practical activities, to explore design opportunities. Some sources have been referenced. • First concepts show some relevance to the context and may be feasible for further development and are communicated through a limited variety of methods and techniques that may not be appropriate. • Some investigations relate to the design context, issues are identified but may not be fully addressed and the student demonstrates an adequate understanding of the information gathered.
1–5	• Limited rationale provided for the context selected with minimal reference to the end user and the constraints that need to be considered in formulating a final solution. • Student employs a single strategy or technique, which may include practical activities, to explore design opportunities. Source referencing is minimal. • First concepts show little relevance to the context and are unlikely to be feasible for further development. These are communicated through basic methods and/or techniques. • Investigations may not relate directly to the design context, a limited number of issues are identified but not addressed and the student demonstrates only a basic understanding of the information gathered.
0	Nothing worthy of credit.

4.5.2 Section B: Producing a design brief and specification

The student is required to produce a clearly stated and challenging design brief that addresses the context and meets the needs of the intended user(s).

The student should formulate a fully detailed design specification that is informed by their investigations and makes full use of the material collated. Statements in the specification need to be clear and unambiguous. There should be specific references to measurable outcomes as well as qualitative statements. Whatever format is chosen to present the specification it is expected that this will be a live and working document that will be constantly referenced throughout the process.

The specification should also include details on how the student intends to organise their time and activities in order to ensure a successful completion of the process.

It should be noted that it is not expected that the assessment criteria be seen as a linear process and aspects from this, and other assessment criteria, might be present throughout the student's portfolio. Wherever it takes place, it is expected that this work will be rewarded.

Mark	Description
9–10	• A comprehensive, clearly stated and challenging design brief resulting from a thorough consideration of investigations undertaken, that fully addresses both the context and the needs and wants of the intended user(s). • The student has produced a comprehensive, detailed and well explained design specification which will fully guide the student's design thinking. • A detailed project management approach to prototype development, including time management and determining quantities and costs of materials, has been fully integrated into the specification.
6–8	• A well considered design brief with a degree of challenge, resulting from well considered investigations, that addresses the context and most of the needs and wants of the intended user(s). • The student has produced a detailed and partially explained design specification which will help to guide the student's design thinking. • There is evidence of a project management approach to prototype development including time management and determining quantities and costs of materials, but may be lacking in detail.
3–5	• An adequate design brief which may lack challenge and clarity, resulting from partially considered investigations that only superficially address the context and the needs and wants of the intended user(s). • The student has produced a design specification which is lacking in some detail and will only guide student's design thinking to a limited extent. • There is some evidence of a basic project management approach to prototype development including time management and determining quantities and costs of materials related to the development of the prototype, but it is not fully integrated into the specification.
1–2	• A basic design brief, lacking both clarity and challenge which makes limited use of the investigations, may not address the context in full and only meets some of the needs and wants of the intended user(s). • The student has produced a design specification which contains minimal detail and does not guide their design thinking. • There is minimal evidence of project management being considered as part of the specification.
0	Nothing worthy of credit.

4.5.3 Section C: Development of design proposals

Design proposals should reflect on first concepts and take full account of the design brief and design specification. The aim should be that the development of their design proposal(s) leads to a

prototype that can be manufactured by the student given their skills and experience. In developing their proposals the student will be expected to make constant reference to their design brief and design specification, to identify if further investigations are required and to carry these out. Design proposals can be demonstrated through a variety of different media, but whatever methods are chosen, they should be of a high quality befitting this level of qualification and show evidence of analysis and annotation (although these elements are not assessed in this assessment criteria). Modelling is seen as a key element of this assessment criteria, whether this be part modelling, practicing of manufacturing and finishing techniques, the production of scale models or material experimentation. There is also the expectation that students will produce working drawings, plans and patterns to enable successful prototype manufacturing to take place. The use of CAD is encouraged, but this should not be the only form of design communication that is used.

It should be noted that it is not expected that the assessment criteria be seen as a linear process and aspects from this, and other assessment criteria, might be present throughout the student's portfolio. Wherever it takes place, it is expected that this work will be rewarded.

Mark	Description
19–25	• The rationale for design decisions is clearly documented and fully justified with constant reference being made to the design brief, specification and investigations throughout the development of their design proposal. • In the development of innovative design proposals the student will demonstrate clear evidence of originality, creativity and a willingness to take design risks. • Excellent use of a variety of modelling techniques to support ongoing development work throughout. This is supported by the use of drawings, sketches, annotations and notes showing clear evidence of design thinking. • Excellent ongoing development of design proposals, achieved through exploration of and experimentation with different materials, techniques and processes leading to an excellent quality design of a prototype for manufacture. • Comprehensive and fully detailed manufacturing specification produced which makes specific reference to relevant quality control checks and allows fully accurate interpretation by a third party. • Project management for manufacturing allows for further development of design proposals in response to ongoing evaluation, testing and full consideration of contingency planning as prototype development takes place.

Mark	Description
13–18	• The rationale for design decisions is documented and justified with regular reference being made to the design brief, specification and investigations throughout the development of their design proposal. • In the development of their design proposals, many of which will demonstrate an innovative approach, the student will demonstrate evidence of originality, creativity and a willingness to take design risks. • Good use of modelling techniques support ongoing development work throughout, showing clear evidence of design thinking supported by the use of drawings, sketches, annotations and notes. • Good ongoing development of design proposals, achieved through exploration of and experimentation with different materials, techniques and processes leading to a good quality design of a prototype for manufacture. • A detailed manufacturing specification is produced which includes reference to relevant quality control checks and allows for mostly accurate interpretation by a third party. • Project management for manufacturing allows for some further development of design proposals in response to ongoing evaluation and testing with some consideration of contingency planning as prototype development takes place.
7–12	• The rationale for design decisions is documented with some justification and reference to the design brief, specification and investigations throughout the development of their design proposal. • In the development of their design proposals, some of which will demonstrate evidence of innovation, there will be elements of originality, creativity and a willingness to take design risks. • Adequate use of modelling techniques to support development work. There is evidence of drawings, sketches, annotations and notes which can be seen to inform subsequent design thinking. • Some ongoing development of design proposals, achieved through exploration of and experimentation with different materials, techniques and processes leading to an adequate quality design of a prototype for manufacture. • An adequate manufacturing specification produced which makes some reference to quality control checks and allows partially accurate interpretation by a third party. • Project management for manufacturing allows for some further development of design proposals in response to evaluation and testing and enables the made outcome to be achieved in a realistic and achievable timescale.

Mark	Description
1–6	• The rationale for design decisions is documented but this may not always be justified and may be lacking reference to the design brief, specification and investigations during the development of their design proposal. • In the development of their design proposals the student will demonstrate little evidence of innovation, originality, creativity and willingness to take design risks. • Basic use of a single or only simple, modelling technique(s), with limited evidence that this supports any subsequent development work. There is some evidence of drawings, sketches, annotations or notes but these do not always inform their design thinking. • Basic refinement of design proposals, with only basic exploration and experimentation of different materials, techniques and processes leading to a basic quality design of a prototype for manufacture. • A basic manufacturing specification produced with limited reference to quality control checks, which may not be sufficiently detailed for a third party to interpret accurately. • Superficial evidence that project management for manufacturing allows for further development of design proposals and which may not enable the made outcome to be achieved in a realistic timescale.
0	Nothing worthy of credit.

4.5.4 Section D: Development of design prototypes

Design prototypes are just that, they need to be directly related to the design proposals and show consideration, at all stages, of how the design thinking continues to be developed and the prototype(s) refined. Given the level of this qualification it is expected that the student will demonstrate their practical skills to a high level using all of the potential resources, tools, machines and equipment at their disposal. During the development of their design prototype(s) the student should be encouraged to continue to experiment and adapt their design proposals as they progress. Constant testing and evaluation is expected to form part of this process. The use of CAM is encouraged, but this should not be the only form of manufacturing that is used.

It should be noted that it is not expected that the assessment criteria be seen as a linear process and that aspects from this, and other assessment criteria, might be present throughout the student's portfolio. Wherever it takes place, it is expected that this work will be rewarded.

Mark	Description
19–25	• Excellent justification provided for selection of appropriate materials and components and proposed techniques and processes, demonstrating an excellent understanding of material properties to ensure excellent quality prototype(s) that are fit for purpose. • Significant complexity or challenge is involved throughout the production of prototype(s). The student demonstrates excellent manufacturing skills combined with an excellent understanding of the need for dimensional accuracy and precision. • The student has selected and used appropriate tools, machinery and equipment, including CAM where required, and worked with a high level of skill, precision and accuracy to produce their prototype(s). • Prototype(s) fully address the design brief, satisfying all major points of the specification and take into account all amendments/ modifications to their original design proposals as necessary. • Student makes all required modifications to the prototype in a fully considered manner in light of feedback from user trials and third party feedback and as a result of testing and evaluation carried out against earlier iterations of the prototype. • Quality assurance is evident throughout and it is clear where planned quality control checks have been applied throughout the process to ensure consistency and safety. • Clear evidence throughout the manufacturing process that appropriate health and safety processes have been both considered and employed.

Mark	Description
13–18	• Good justification provided for selection of appropriate materials and components and proposed techniques and processes demonstrating a good understanding of material properties to ensure good quality prototype(s) that are fit for purpose. • There is some complexity or challenge involved throughout the production of prototype(s). The student demonstrates good manufacturing skills combined with a generally sound understanding of the need for dimensional accuracy/precision. • The student has selected and used appropriate tools, machinery and equipment, including CAM where required, and worked with a good level of skill, precision and accuracy to produce their prototype(s). • Prototype(s) mostly address the design brief, satisfying the majority of major points of specification and takes into account some amendments/modifications to their original design proposals as necessary. • Student makes some well thought out modifications to their prototype in light of feedback from user trials and third party feedback and as a result of testing and evaluation carried out against earlier iterations of the prototype. • Quality assurance is evident at most stages in the process and it is clear where planned quality control checks have been applied to ensure consistency and safety. • There is evidence throughout the manufacturing process that appropriate health and safety processes have been both considered and employed.

Mark	Description
7–12	• Adequate justification provided for selection of appropriate materials and components and proposed techniques and processes demonstrating an adequate understanding of material properties to ensure adequate quality prototype(s) that are mostly fit for purpose. • There is some complexity or challenge within aspects of the prototype. The student demonstrates adequate manufacturing skills combined with some understanding of the need for dimensional accuracy/precision. • The student has selected and used appropriate tools, machinery and equipment, including CAM where required, and worked with an adequate level of skill, precision and accuracy to produce their prototype(s). • Prototype(s) partially address the design brief, satisfying some of the major points of specification, but do not always take into account amendments/modifications to their original design proposals. • Student makes some superficial modifications to their prototype(s) in light of feedback from user trials and third party feedback and as a result of testing and evaluation carried out against earlier iterations of the prototype. • Quality assurance is evident at stages in the process and it is clear where quality control checks have been applied to ensure consistency and safety. • There is some evidence during the manufacturing process that appropriate health and safety processes have been both considered and employed.

Mark	Description
1–6	• Little justification provided for selection of materials and components and proposed techniques and processes, not all of which may be appropriate, only a basic understanding of material properties demonstrated which may lead to the production of an inadequate prototype(s). • The development of the prototype(s) offers little in the way of complexity or challenge, only basic manufacturing skills are demonstrated, showing little understanding of the need for accuracy and precision. • The student has selected and used appropriate tools, machinery and equipment, including CAM where required, but has worked with only a basic level of skill, precision and accuracy to produce their prototype(s). • Prototype(s) address only few parts of the design brief, and few of the major points of specification, they do not take into account amendments/modifications to their original design proposals. • Student makes a few minor modifications to their prototype in light of feedback from user trials and third party feedback and as a result of testing and evaluation carried out against earlier iterations of the prototype. • Basic quality assurance is sporadic throughout the process and it is not always clear where quality control checks have been applied. • There is little evidence during the manufacturing process that appropriate health and safety processes have been both considered and employed.
0	Nothing worthy of credit.

4.5.5 Section E: Analysing and evaluating

In awarding marks for this section it is vital to remember that evidence for analysing and evaluating can take place in any part of the NEA. Students should be encouraged to be constantly analyzing their work and recording their thoughts in order to explain their thinking. Ongoing evaluation should be seen to be informing the decision making process, particularly being used to bring about modifications to design proposals and prototype development. Central to this is the close and regular involvement of the proposed client/user(s) making sure that the prototype is both fit for purpose and meets the requirements of the client/user(s) rather than just meeting those of the student.

Mark	Description
16–20	• Comprehensive evidence of analysis and evaluation throughout the process, which has clearly informed the chosen context, client or user and the subsequent development and manufacture of the prototype. • Testing is carried out in a focused and comprehensive way with clear evidence of how the results have been used to inform the design and any modifications to the prototype. • Student has provided a well reasoned critical analysis of their final outcome which links clearly to their design brief and specification and provides full justification for the extent to which the prototype is both fit for purpose and meets the needs of the client/user. • A comprehensive critical evaluation of their final prototype, clearly identifying how modifications could be made to improve the outcome, together with a full justification for these modifications and full consideration provided for how the prototype could be developed for different production methods.
11–15	• Good evidence of analysis and evaluation at most stages of the process which has informed the chosen context, client or user and the subsequent development and manufacture of the prototype. • Testing is carried out in a focused manner with some evidence of how the results have been used either to inform the design or to make any modifications to the prototype. • Student has provided a reasoned critical analysis of their final outcome which links to their design brief and specification and provides some justification for the extent to which the prototype is fit for purpose and meets most of the client/user needs. • A good evaluation of their final prototype together with clear justification for modifications that could be made to improve the outcome and informed consideration provided for how the prototype could be developed for different production methods.
6–10	• Adequate evidence of analysis and evaluation at some stages of the process which has had some influence on the chosen context, client or user and the subsequent development and manufacture of the prototype. • Testing is carried out with minimal evidence that the results have been used to either inform the design or to make modifications to the prototype. • Student has provided an analysis of their final outcome with some links to their design brief and specification and makes reference to how the prototype is fit for purpose and meets some client/user needs. • An adequate evaluation of their final prototype together with some justification for modifications that could be made to improve the outcome as well as some consideration given to how the prototype could be developed for different production methods.

Mark	Description
1–5	• Basic evidence of analysis and evaluation which has had limited influence upon the chosen context, client or user and the subsequent development and manufacture of the prototype. • Testing has been carried out but the results may not have been used to inform subsequent design or modifications to the prototype. • Student has provided a superficial analysis of their final outcome which may not refer to the design brief and specification and which does not address the extent to which the prototype is either fit for purpose or meets client/user needs. • Evaluation of final prototype is superficial and any suggestions for modifications are made with little if any justification and there is little or no consideration as to how the prototype could be developed for different production methods.
0	Nothing worthy of credit.

5 Non-exam assessment administration

The non-exam assessment (NEA) for this specification is made up of a single design and make project.

Visit aqa.org.uk/7562 for detailed information about all aspects of NEA administration.

The head of the school or college is responsible for making sure that NEA is conducted in line with our instructions and Joint Council for Qualifications (JCQ) instructions.

5.1 Supervising and authenticating

To meet Ofqual's qualification and subject criteria:

- **students** must sign the *Candidate record form* (CRF) to confirm that the work submitted is their own
- all **teachers** who have marked a student's work must sign the declaration of authentication on the CRF (this is to confirm that the work is solely that of the student concerned and was conducted under the conditions laid down by this specification)
- teachers must ensure that a CRF is attached to each student's work.

All practical work that is submitted for assessment must be completed under direct supervision. If a student needs to undertake some work that cannot be completed in school/college no credit can be given for the work undertaken off site. You must ensure that you are familiar with the prototype before it is taken off site and also verify it after any off site work has been completed to ensure that the only work that has been completed off site is what has been discussed beforehand.

Students must have sufficient direct supervision for the written element to ensure that the work submitted can be confidently authenticated as their own. If a student receives additional assistance and this is acceptable within the guidelines for this specification, you should award a mark that represents the student's unaided achievement. Please make a note of the support the student received on the CRF and sign the authentication statement. If the statement is not signed, we cannot accept the student's work for assessment.

5.2 Avoiding malpractice

Please inform your students of the AQA regulations concerning malpractice. They must not:

- submit work that is not their own
- lend work to other students
- allow other students access to, or use of, their own independently sourced source material (they may lend their books to another student, but they must not plagiarise other students' research)
- include work copied directly from books, the internet or other sources without acknowledgement
- submit work that is word-processed by a third person without acknowledgement
- include inappropriate, offensive or obscene material.

These actions constitute malpractice and a penalty will be given (for example, disqualification).

If you identify malpractice **before** the student signs the declaration of authentication, you don't need to report it to us. Please deal with it in accordance with your school or college's internal procedures. We expect schools and colleges to treat such cases very seriously.

If you identify malpractice **after** the student has signed the declaration of authentication, the head of your school or college must submit full details of the case to us at the earliest opportunity. Please complete the form JCQ/M1, available from the JCQ website at jcq.org.uk

You must record details of any work which is not the student's own on the CRF or another appropriate place.

Consult your exams officer about these procedures.

5.3 Teacher standardisation

We'll provide support for using the marking criteria and developing appropriate tasks through teacher standardisation.

Example material and guidance will be available at teacher standardisation to help schools and colleges understand the quality of the work associated with the different mark bands and how to apply the assessment criteria.

For further information about teacher standardisation visit our website at aqa.org.uk/7562

In the following situations teacher standardisation is essential. We will send you an invitation to complete teacher standardisation if:

- moderation from the previous year indicates a serious misinterpretation of the requirements
- a significant adjustment was made to the marks in the previous year
- your school or college is new to this specification.

Your school or college will be assigned an NEA appointed adviser who will be able to assist you in matters relating to the NEA.

For further support and advice email your subject team at dandt@aqa.org.uk

5.4 Internal standardisation

You must ensure that you have consistent marking standards for all students. One person must manage this process and they must sign the Centre declaration sheet to confirm that internal standardisation has taken place.

Internal standardisation may involve:

- all teachers marking sample pieces of work to identify differences in marking standards
- discussing any differences in marking at a training meeting for all teachers involved
- referring to reference and archive material such as previous work or examples from our teacher standardisation.

5.5 Commenting

To meet Ofqual's qualification and subject criteria, you must show clearly how marks have been awarded against the marking criteria in this specification.

Your comments will help the moderator see, as precisely as possible, where you think the students have met the marking criteria.

You must record your comments on the CRF.

5.6 Submitting marks

You must check that the correct marks are written on the CRF and that the total is correct.

The deadline for submitting the total mark for each student is given at aqa.org.uk/keydates

5.7 Factors affecting individual students

For advice and guidance about arrangements for any of your students, please email us as early as possible at eos@aqa.org.uk

Occasional absence: you should be able to accept the occasional absence of students by making sure they have the chance to make up what they have missed. You may organise an alternative supervised session for students who were absent at the time you originally arranged.

Lost work: if work is lost you must tell us how and when it was lost and who was responsible, using our special consideration online service at aqa.org.uk/eaqa

Extra help: where students need extra help which goes beyond normal learning support, please use the CRF to tell us so that this help can be taken into account during moderation.

Students who move schools: students who move from one school or college to another during the course sometimes need additional help to meet the requirements. How you deal with this depends on when the move takes place.

- If it happens early in the course, the new school or college should be responsible for the work.
- If it happens late in the course, it may be possible to arrange for the moderator to assess the work as a student who was 'educated elsewhere'.

5.8 Keeping students' work

Students' work must be kept under secure conditions from the time that it is marked, with CRFs attached. After the moderation period and the deadline for Enquiries about Results (or once any enquiry is resolved) you may return the work to students.

5.9 Moderation

You must send all your students' marks to us by the date given at aqa.org.uk/deadlines. You will be asked to send a sample of your students' NEA evidence to your moderator.

You must show clearly how marks have been awarded against the assessment criteria in this specification. Your comments must help the moderator see, as precisely as possible, where you think the students have met the assessment criteria. You must:

- record your comments on the Candidate Record Form (CRF)
- check that the correct marks are written on the CRF and that the total is correct.

The moderator re-marks a sample of the evidence and compares this with the marks you have provided to check whether any changes are needed to bring the marking in line with our agreed standards. Any changes to marks will normally keep your rank order but, where major inconsistencies are found, we reserve the right to change the rank order.

School and college consortia

If you're in a consortium of schools or colleges with joint teaching arrangements (where students from different schools and colleges have been taught together but entered through the school or college at which they are on roll), you must let us know by:

- filling in the *Application for Centre Consortium Arrangements for centre-assessed work*, which is available from the JCQ website jcq.org.uk
- appointing a consortium coordinator who can speak to us on behalf of all schools and colleges in the consortium. If there are different coordinators for different specifications, a copy of the form must be sent in for each specification.

We'll allocate the same moderator to all schools and colleges in the consortium and treat the students as a single group for moderation.

5.10 After moderation

We will return your students' work to you after the exams. You'll also receive a report when the results are issued, which will give feedback on the appropriateness of the tasks set, interpretation of the marking criteria and how students performed in general.

We'll give you the final marks when the results are issued.

To meet Ofqual requirements, as well as for awarding, archiving or standardising purposes, we may need to keep some of your students' work. We'll let you know if we need to do this.

6 General administration

You can find information about all aspects of administration, as well as all the forms you need, at aqa.org.uk/examsadmin

6.1 Entries and codes

You only need to make one entry for each qualification – this will cover all the question papers, non-exam assessment and certification.

Every specification is given a national discount (classification) code by the Department for Education (DfE), which indicates its subject area.

If a student takes two specifications with the same discount code, further and higher education providers are likely to take the view that they have only achieved one of the two qualifications. Please check this before your students start their course.

Qualification title	AQA entry code	DfE discount code
AQA Advanced Level GCE in Design and Technology: Fashion and Textiles	7562	TBC

This specification complies with:

- Ofqual *General conditions of recognition* that apply to all regulated qualifications
- Ofqual GCE qualification level conditions that apply to all GCEs
- Ofqual GCE subject level conditions that apply to all GCEs in this subject
- all other relevant regulatory documents.

The Ofqual qualification accreditation number (QAN) is 603/1104/6.

6.2 Overlaps with other qualifications

There is overlapping content in the AS and A-level Design and Technology: Fashion and Textiles specifications. This helps you teach the AS and A-level together.

6.3 Awarding grades and reporting results

The A-level qualification will be graded on a six-point scale: A*, A, B, C, D and E.

Students who fail to reach the minimum standard for grade E will be recorded as U (unclassified) and will not receive a qualification certificate.

6.4 Resits and shelf life

Students can resit the qualification as many times as they wish, within the shelf life of the qualification.

6.5 Previous learning and prerequisites

There are no previous learning requirements. Any requirements for entry to a course based on this specification are at the discretion of schools and colleges.

However, we recommend that students should have the skills and knowledge associated with a GCSE Design and Technology: Fashion and Textiles or equivalent.

6.6 Access to assessment: diversity and inclusion

General qualifications are designed to prepare students for a wide range of occupations and further study. Therefore our qualifications must assess a wide range of competences.

The subject criteria have been assessed to see if any of the skills or knowledge required present any possible difficulty to any students, whatever their ethnic background, religion, sex, age, disability or sexuality. Tests of specific competences were only included if they were important to the subject.

As members of the Joint Council for Qualifications (JCQ) we participate in the production of the JCQ document *Access Arrangements and Reasonable Adjustments: General and Vocational qualifications*. We follow these guidelines when assessing the needs of individual students who may require an access arrangement or reasonable adjustment. This document is published at jcq.org.uk

Students with disabilities and special needs

We're required by the Equality Act 2010 to make reasonable adjustments to remove or lessen any disadvantage that affects a disabled student.

We can make arrangements for disabled students and students with special needs to help them access the assessments, as long as the competences being tested aren't changed. Access arrangements must be agreed **before** the assessment. For example, a Braille paper would be a reasonable adjustment for a Braille reader.

To arrange access arrangements or reasonable adjustments, you can apply using the online service at aqa.org.uk/eaqa

Special consideration

We can give special consideration to students who have been disadvantaged at the time of the assessment through no fault of their own – for example a temporary illness, injury or serious problem such as family bereavement. We can only do this **after** the assessment.

Your exams officer should apply online for special consideration at aqa.org.uk/eaqa

For more information and advice visit aqa.org.uk/access or email accessarrangementsqueries@aqa.org.uk

6.7 Working with AQA for the first time

If your school or college hasn't previously offered our specifications, you need to register as an AQA centre. Find out how at aqa.org.uk/becomeacentre

6.8 Private candidates

This specification is not available to private candidates.

6.9 Use of calculators

Students may use a calculator in the exam. They must ensure that their calculator meets the requirements as set out in the *JCQ Instructions for conducting examinations*. These instructions make it clear what the requirements are for calculators (what they must be) and what they are not (what they must not be). The instructions are regularly updated and can be found at jcq.org.uk

7 Appendix 1: Links to maths and science

All A-level specifications in design and technology must require students to demonstrate their application of knowledge, understanding and skills of maths and science in both theoretical and practical ways.

Design and technology uses maths and science to support decisions made in the processes of designing and making.

7.1 Maths

Ref	Maths skills requirement	Potential applications: fashion and textiles
a	Confident use of number and percentages	Calculation of quantities of materials, costs and sizes
b	Use of ratios	Pattern grading
c	Calculation of surface areas and/or volumes	Determining quantities of materials
d	Use of trigonometry	Calculation of sides and angles as part of fashion and textiles product design
e	Construction, use and/or analysis of graphs and charts	Representation of data used to inform design decisions and evaluation of outcomes. Presentation of market data, user preferences, outcomes of market research
f	Use of coordinates and geometry	Use of datum points and geometry when setting out patterns
g	Use of statistics and probability as a measure of likelihood	Interpret statistical analyses to determine user needs and preferences. Use data related to human scale and proportion to determine required sizes and dimensions of fashionproducts

7.2 Science

Ref	Scientific knowledge and skills	Potential applications: fashion and textiles
a	Describe the conditions which cause degradation	Ensure products are designed to take account of potential degradation through environmental factors
b	Know the physical properties of materials and explain how these are related to their uses	Understand the appropriate use of materials, including textiles, fibres, polymers, technical textiles, ceramics, and metals, based on their physical properties

Get help and support

Visit our website for information, guidance, support and resources at aqa.org.uk/7562

You can talk directly to the Design and Technology: Fashion and Textiles subject team:

E: dandt@aqa.org.uk

T: 0161 957 3334