**Switching from
Pearson GCSE (9-1) Design and Technology to OCR GCSE (9-1) Design and Technology**

### Introduction

Are you currently teaching the Pearson GCSE Design and Technology specification? Are you thinking of switching? We are here to help.

We will provide you with all the support you could need to switch from the Pearson GCSE in Design and Technology to our OCR GCSE in Design and Technology, including:

* Mapping of Pearson’s specification to OCR’s specification
* An overview of the differences in assessment
* Mapping of the Pearson explicit Specification content to OCR’s more open specification content

### Our offer

* Our GCSE (9-1) Design and Technology qualification has been created by our subject specialist team working with a number of stakeholders including: OCR Design, Technology and Engineering Consultative Forum, teachers, assessors, Higher Education Institutions, industry experts and subject associations. It has been created to be a qualification which engages students to achieve their full potential.
* Our GCSE team are passionate about design and technology education. With industry, teaching and assessment experience, they are fully committed to supporting centres’ delivery of our GCSE qualifications.
* We have produced a wide range of support materials, including a range of free resources available on our website, CPD opportunities and Design and Technology Subject Advisors
are available to support teachers directly. This support will continuously evolve to suit the requirements of teaching and learning through the lifetime of the specification, based on continued feedback from teachers.
* Within this document as well as mapping the specifications, we also provide comparison of the explicit content from Pearson and non-explicit content of OCR; making it easier for you to see how our approach provides you with opportunity to explore and deliver the course in a flexible way suited to your centre. It also challenges students to demonstrate their understanding of different areas of study rather than remembering explicit content and examples.
* Join conversations on the OCR Design and Technology Facebook page and @OCR\_DesignTech on Twitter to discuss and share good practice.

### Key differences

| **OCR GCSE (9-1) Design and Technology** | **Pearson GCSE (9-1) Design and Technology** |
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| This qualification relates authentic real-world 21st century awareness of iterative design practices and strategies used by the creative, engineering and manufacturing industries, and shifts the focus of learning onto the process of designing rather than on the outcome. | This qualification continues to only challenge students to investigate needs, design ideas in response, make these solutions, and evaluate them against the design brief and the specification, as was the expectation of the legacy qualification. The specification also demonstrates a bias to working within specific material areas, as opposed to a 21st century approach of being more open.  |
| Specification content is not explicit, allowing centres to engage with teaching the course in a flexible way that works to their existing strengths and assesses students’ ability to apply understanding of their chosen areas of study. | Specification content is entirely explicit, requiring centres to deliver all of the content under core and material category (choice) headings, including unique topics such as Life Cycle Analysis, Demographic movement, natural disasters, agro-textiles, and robotic materials (as a composite), to name some of the new explicit content. |
| The course offers the opportunity for students to select deeper learning in paper/board, timbers, metals, polymers and textiles, as well as Design Engineering as an alternative area of ‘In depth’ learning to the material areas. | The course offers legacy material areas that include paper/board, timbers, metals, polymers, textiles and systems.  |
| The NEA requirement provides an approximate guide of 40 hours over 24 slides, but does not penalise students for excessive or briefer portfolios, so long as they are concise and relevant.  | The NEA requirements provide no guide hours for completion of the portfolio of work, but approximates between 20-30 slides but a maximum of 20 photographs.  |
| The examination is split into 2 sections, with a maximum of two extended response questions. In depth questions offer accessibility to students no matter which material area(s) they have chosen. | The examination is split into 2 sections, but without any limit on the number of extended open response questions. The In-depth knowledge section “Material Categories” is worth 60%, whilst core is only 40%.  |
| The examination will assess only the mathematical content from the specification, which is the same headings as those required by Pearson. Science content is considered implicit within the teaching of the course, but on explicitly tested. | The examination will assess 15 marks worth of mathematical content from the specification, 10 marks in the core section and 5 marks in Material categories section. Science content including mechanical advantage, velocity ratio and RPM calculations are all required to be taught under explicit core content, and can be tested as part of section A of the examination. |
| The NEA is assessed over 3 AO’s, Explore, Create and Evaluate, split into 5 strands for assessment. | The NEA is assessed over 3 AO’s (1-3), Identify and Investigate, Design and Make, Analyse and Evaluate, split into 4 strands of assessment. |
| The language of assessment in the NEA is clear, requiring students work to either be; convincingly, adequately, or just meeting the statement.  | The language of assessment in the NEA is in levels, requiring student work to either be level 1, 2 or 3, and matched to descriptions requiring students achieve the level basically, generally or fully, in respective order. |

### Content mapping

The content within the OCR GCSE (9-1) in Design and Technology covers the key principles and concepts of design and technology and will be very familiar. We’ve laid it out in a logical progression to support teaching the GCSE in a linear way.

Important differences to the course content include

* The OCR course encourages learners to explore the world of design broadly without barriers, create unique solutions to real world problems that will be reinforced by the genuine insight of looking within the contextual challenge, and evaluating their solutions with the freedom of recognising that their design outcome is; one of many possible outcomes; or merely a point in the evolution of a better solution, that will make a difference to the lives of real users.
* By learning with an enquiry approach, learners on the OCR course will become more exploratory and inquisitive in their practice, just as it would be in industry, which will result in graduating students possessing the skills needed for the modern workplace or for further study of Design and Technology at A Level or other route.
* By teaching learners to interpret and explain why designers have made certain decisions in the development of a solution, and by having an understanding of the complexity of the iterative design process, OCR students will be able to better react to their own challenges with innovation and creativity.
* Through the removal of legacy assessed tasks such as design specifications or heavily weighted manufacturing work, learners on the OCR course will be rewarded for focusing and communicating a genuine design journey that developed without limitations, rather than a closed process of research leading to a design brief and specification, before design ideas are developed into a final design, that is manufactured and tested/evaluated.
* The course content for OCR does not implicitly focus on designing and making as an area of learning, but encourages students to use an iterative approach to exploring a context, managing multiple problems, and solving them through a nonlinear fashion, unrestricted by material areas. Learners have the freedom to use as many or as few materials, processes and techniques that they deem to be required to achieve the appropriate design outcome.
* The OCR course has a unique reference and a requirement to the use of modern digital tools for design and manufacture, which by inclusion ensures that there is a match to how modern industry approaches design.
* The Pearson specification has no reference implicitly or explicitly referencing essential usability and user interaction factors including the impact of a product on lifestyle, ease of use, inclusivity, ergonomics, and anthropometrics.
* Centres following the Pearson specification are required to teach specific scientific content including how to calculate mechanical advantage, velocity ratio and revolutions per minute
* All students following the Pearson specification must be able to conduct a full life cycle analysis, which is a named aspect of the NEA and core course content.
* Pearson deliver a specific list of past and present designers and companies that must be studied, and can form part of core content assessment in the examination.
* With Pearson, course content relating to Textiles and Systems are much more explicit as part of core content, requiring centres to be able to teach these areas more broadly
* Within the Pearson specification, the naming of specific future scenarios including natural disasters; medical advances; travel; global warming and communication, narrows the opportunity to teach new and emerging technology that is current/relevant or that becomes important during the lifetime of the specification.

Below is a table to show where Pearson Design and Technology content is covered in the OCR GCSE Design and Technology specification.

| **Pearson content in GCSE (9-1) Design and Technology** | **OCR content in GCSE (9-1) Design and Technology** | **Surplus Content In Pearson GCSE (9-1) Design and Technology** |
| --- | --- | --- |
| 1.1 The impact of new and emerging technologies applying a breadth of technical knowledge and understanding of characteristics in relation to; Industry; enterprise; sustainability; people; culture; society; environment; and production techniques and systems. | 3.1 New and Emerging technologies and their impact on industry, enterprise, the circular economy, lifestyle, culture, society, the environment and sustainability | People - workforce, consumers, children, people with disability, wage levels, high skilled workforce, apprenticeships. |
| 1.2 How the critical evaluation of new and emerging technologies informs design decisions; considering contemporary and potential future scenarios from different perspectives, such as ethics and the environment | 2.2 New and Emerging Technologies and their influence on contemporary and future scenarios relating to ethics, the environment and product enhancement.7.6 New and emerging technologies with implications for production processes. | Contemporary and potential future scenarios - natural disasters, medical advances, travel, global warming, communication. |
| 1.3 How energy is generated and stored in order to choose and use appropriate sources to Make products and power systems.Sources, generation and storagePowering systemsFactors to consider | 3.2 Energy sources for products and power systems, including renewable and non-renewable Sources. | Power systems - circuit/system connections, cost |
| 1.4 Developments in modern and smart materials, composite materials and technical textiles.Modern and smart materialsCompositesTechnical textiles | 5.1 The main categories of materials including* Paper and boards
* Natural and manufactured Timber
* Ferrous and Non-ferrous Metals
* Thermo and Thermosetting polymers
* Textile fibres and fabrics
* Modern and Smart Materials, composites, technical textiles
 | Composites - robotic materials.Technical textiles - agro-textiles, geo-textiles, construction textiles, domestic textiles, environmentally friendly textiles, protective textiles, sports textiles. |
| 1.5 The functions of mechanical devices used to produce different sorts of movements, including the changing of magnitude and the direction of forces.Types of movementClassification of leversLinkagesCAMsFollowersPulleys and beltsCranks and slidersGear types | 6.3 Controlled movement through types of motion, forces, and mechanical devices that change the magnitude and direction of a force. | Calculations of velocity ratio, mechanical advantage and revolutions per minute. |
| 1.6 How electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to product a range of outputs.SensorsControl devicesOutputs | 6.4 Electronic systems, sensors and control devices, inputs and outputs, and programmable components. |  |
| 1.7 The use of programmable components to embed functionality into products in order to enhance and customise their operation.The use of flowchartsSwitching outputs/inputsAnalogue inputsSimple routines |  |
| 1.8 The categorisation of the types, properties and structure of ferrous and non-ferrous metalsFerrousNon ferrousProperties | 5.1 The main categories of materials including:* Paper and boards
* Natural and manufactured Timber
* Ferrous and Non -ferrous Metals
* Thermo and Thermosetting polymers
* Textile fibres and fabrics
* Modern and Smart Materials, composites, technical textiles

5.2 Characteristic properties of the main material categories, their physical working properties, and factors including function, aesthetics, environment, availability, cost, social, cultural and ethical considerations. |  |
| 1.9 The categorisation of the types, properties and structure of paper and boards.PaperBoardProperties |  |
| 1.10 The categorisation of the types, properties and structure of thermoforming and thermosetting polymers.ThermoformingThermosettingProperties |  |
| 1.11 The categorisation of types, properties and structure of natural, synthetic, blended and mixed fibres, and woven, non-woven and knitted textiles.NaturalSyntheticWovenNon-wovenKnittedProperties |  |
| 1.12 The categorisation of the types, properties and structure of natural and manufactured timbers.Natural softwoodsNatural hardwoodsManufactured timbersProperties |  |
| 1.13 All design and technological practice takes place within contexts which informs outcomes | 1.1 Consider and Explore the context, identify primary users and stakeholders, investigate social, cultural, moral and economic factors as opportunities or constraints. |  |
| 1.14 Investigate environmental, social and economic challenges when identifying opportunities and constraints that influence the processes of designing and making.Social, ethnic and economic groupsEnvironmental, social and economic issuesGreen designsRecycling/reusingHuman capacityCost of materialsManufacturing capabilityEnvironmental Impact | 3.3 Considerations of environment, social and economic factors relating to environmental initiatives, fair trade, social and ethical initiatives and global sustainable developments8.1 Costings and availability of materials for designing, including quantities, cost and size. | The main factors relating to Green Designs.Human capability |
| 1.15 Investigate and analyse the work of past and present professionals and companies in order to inform design.Form, function, client/user, performance, materials/components, scale, sustainability, aesthetics, marketability, innovation.Alessi, Apple, Heatherwick Studio, Joe Casely-Hayford, Pixar, Raymond Loewy, Tesla, Zaha Hadid. | 2.1 Explore existing solutions by looking at:* Materials, components and processes
* Fashion, trends and taste/style
* Marketing and branding
* Society
* Usability
* The Environment and life cycle assessment
* The work of past and present professionals
 | The work of past and present designers and companies:1. Alessi
2. Apple
3. Heatherwick Studio
4. Joe Casely-Hayford
5. Pixar
6. Raymond Loewy
7. Tesla
8. Zaha Hadid.
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| 1.16 Use different design strategies to generate initial ideas and avoid design fixation.CollaborationUser Centred DesignSystems thinking | 3.3 What wider implications can have an influence on the processes of designing and making?4.2 Sourcing information and problem solving thinking focused on user centred design and systems thinking |  |
| 1.17 Develop, communicate, record and justify design ideas, applying suitable techniques | 4.1 Communication techniques including 2D/3D sketches, sketch modelling, exploded drawings, mathematical modelling and flow charts | Cut and paste techniquesDigital Photography/mediaIsometric and oblique projection |
| 2.1 Design Contexts |  |  |
| 2.2 The sources, origins, physical and working properties of "chosen material category" and their social and ecological footprint. | 5.3 Sourcing or origins of materials, the ecology of processing, their lifecycle and end of life options. |  |
| 2.3 The way in which the selection of "chosen material category" is influenced.Aesthetics factorsEnvironmental factorsAvailability factorsCost factorsSocial factorsCultural/ethical factors | 5.2 Characteristic properties of the main material categories, their physical working properties, and factors including function, aesthetics, environment, availability, cost, social, cultural and ethical considerations.8.1 Costings and availability of materials for designing, including quantities, cost and size. |  |
| 2.4 The impact of forces and stresses on "chosen material category" and how they can be reinforced and stiffened.Forces and stressesReinforcement/stiffening | 6.1 Material structural integrity, forces and stresses | I, U, T , C beams |
| 2.5 The stock forms, types and sizes in order to calculate and determine the quantity of "chosen material category" required.Stock forks/typessizes | 5.4 Common forms of materials, their standard units of measure, weight and size, stock forms and standard components. |  |
| 2.6 Alternative processes that can be used to manufacture "chosen material category" products to different scales of production.ProcessesScales of productionTechniques for quantity production | 7.5 Process variation between different scales of production. |  |
| 2.7 Specialist techniques, tools, equipment and processes that can be used to shape, fabricate, construct and assemble a high-quality "chosen material category" prototype.Tools and equipmentShapingFabricating/constructingAssembling | 7.1 Modelling processes and techniques7.2 Specialist techniques, hand tools and equipment to shape, fabricate, construct and assemble high quality prototypes.7.3 Achieving accuracy when making prototypes and products |  |
| 2.8 Appropriate surface treatments and finishes that can be applied to "chosen material category" for function and aesthetic purposes.Surface finishes and treatments | 6. 2 Material finishing for function, durability and aesthetics |  |

# Assessment

### Our Examination Offer

The format for the examination paper, The Principles of Design and Technology, is simple for students to understand, with only two sections to complete, A and B. The paper is well differentiated to deliver a paper that is appropriately accessible to students of all levels.

The Principles of Design and Technology paper will feature two extended response questions only. Both of these questions will allow students the opportunity to apply knowledge and understanding from their chosen area(s) of in-depth learning.

By studying any one single material area to an in-depth level, students will be able to respond to all questions in Section B of the paper, but further areas can be added to offer them further optionality. When delivering the examined content, centres have the option to deliver it in a way that makes it specific to a design discipline, such as Fashion and Textiles or Design Engineering.

A comparison of the examination assessment is below:

| **OCR GCSE (9-1) Design and Technology** | **Pearson GCSE (9-1) Design and Technology** |
| --- | --- |
| **Coverage of the paper** |
| One examination paper, worth 50% of the total GCSE, which assesses two areas, core knowledge and understanding of design and technology principles, and in-depth knowledge and understanding of at least one main material area. | One examination, worth 50% of the total GCSE, which assesses two areas, Technical principles and Designing and Making principles. |
| In-depth material areas include:* Papers and boards;
* Natural and manufactured timber;
* Ferrous and non-ferrous metals;
* Thermo and thermosetting polymers;
* Natural, synthetic, blended and mixed fibres, woven, non-woven and knitted textiles.

Centres have the flexibility to delivery as few or as many in-depth areas dependent on the ability and aspirations of their students. | Material areas include:* metals
* papers and boards
* polymers
* textiles
* timbers
 |
| The in-depth material area for the examination can alternatively focus on design engineering. | The main material area for the examination can also focus on systems. |
| **Overview of the paper** |
| Students have 2 hours to complete the examination paper, and it is assessed out of 100 marks. | Students have 1 hour 45 minutes to complete the examination paper, and it is assessed out of 100 marks. |
| Only 15% of the paper will assess mathematics | Maths skills represent 15% of the total marks for the qualification, and are assessed through the examination. |
| The science content is considered implicit; therefore no maximums or minimums are set. | Questions in the core section of the examination can require students to respond to specific scientific calculations. |
| The examination paper is split into 2 sections, with a supporting booklet of information for Section B. Section A is worth 55 marks, and focuses predominantly on core knowledge.Section B is worth 45 marks, and students choose a product within a situational context in (one of) their chosen in-depth material area(s). | The examination paper is split into 2 sections.Section A is worth 40 marks and focuses on core knowledgeSection B which is worth 60 marks, and where students choose a material area. |
| **Structure of the paper** |
| Section A comprises 3 sets of wider questions, with a mixture of different levels of challenge, and will include one extended response question. The questions follow the same structure:* product analysis
* main maths question
* electronics, mechanics or wider issues
 | Section A comprises a mixture of different style questions including open-response, graphical, calculation and extended open response, with 10 marks of calculations. |
| Section B is complemented with an insert booklet covering a situational context that is the same for all students. It comprises a mixture of different level questions, and again will include one extended response question. The questions follow the same structure:* core principles not covered in Section A
* in-depth technical principles of making and/or manufacture
* wider issues related to the situational context and/or manufacture of the in-depth products.
 | Section B comprises a mixture of different question styles including open-response, graphical, calculation and extended open response, with 5 marks of calculations. |
| **Content covered in each section** |
| For the 55 mark Section A, students will be assessed on their knowledge of:* **Identifying requirements**
* **Learning from existing products and practice**
* **Implications of wider issues**
* **Design thinking and communication**
* **Core materials considerations** relating to materials available to designers and factors when considering their selection
* **Core technical understanding** relating to movement and electronics systems in products
* **Core understanding of processes and techniques** relating to new and emerging technologies
 | For the 40 mark core content section, students will be assessed on their ability to demonstrate their understanding of how to take products to market and build a successful business. It covers aspects of new and emerging technologies, ethics and environmental impact, plus a broad overview of materials and tools used in design.There will be specific questioning of the mathematical content related to any area of core content.There can be any amount of questioning related to scientific content.There can be any number of extended response questions.  |
| For the 45 mark Section B, students will be assessed on their knowledge of:* **Identifying Requirements** relating to the situational context of a design solution
* **Design thinking and communication** relating to graphical communication
* **Material considerations** relating to specific materials, their origins and stock forms
* **Technical understanding** relating to structural integrity and finishes
* **Manufacturing processes and techniques** relating to iterative models, manipulating and joining materials for final prototypes, accuracy, digital manufacture, scales of production, and large scale manufacture.
* **Viability of design solutions**
 | For the 60 mark in-depth content section, students must concentrate on their chosen material and show their specialist knowledge in the subject area they have a passion for from; metals, papers and boards, polymers, systems, textiles or timbers.There will be specific questioning of the mathematical content related to the material area.There can be any number of extended response questions.  |
| The Mathematics content required to be covered for the examination includes:* **Arithmetic and numerical computation**
* **Handling data**
* **Graphs**
* **Geometry and trigonometry**
 | The Mathematics content required to be covered for the examination includes:* **Arithmetic and numerical computation**
* **Handling Data**
* **Graphs**
* **Geometry and trigonometry**
 |
| Implicit within the content of design and technology | The Scientific knowledge content includes:* **Use Scientific vocabulary, terminology and definitions**
* **Life Cycle Assessment and Recycling Using Materials**
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### Our NEA Offer

The OCR NEA assessment format is simpler for students to understand, with 3 assessment objectives, **explore**, **create** and **evaluate**, split into just 5 strands for assessment.

OCR will provide 3 contextual challenges for each cohort in June prior to the May submission deadline.

The approximate 40 hours and 24 A3 pages suggested is no more than a guide and students will not be penalised for producing more or less that this amount, so long is their work is relevant and concise.

The OCR NEA encourages students to approach the design process as industry would, by taking risks, managing multiple priorities, working in a non-linear fashion, and unrestricted by material areas.

Assessments of student work rewards the iterative design and make process the student follows rather than focusing on the outcome with a strong weighting towards manufacture. Assessing student work is simplified for the centre to help the assessor first identify an appropriate band for the evidence being assessed, before using easy to understand "convincingly", "adequately" and "just" meeting descriptors to define top, middle or bottom positions within that band.

The language of the NEA matches 21st Century industry approaches, replacing dated terms such as ‘clients’ with ‘stakeholders’, and dated tasks such as writing a design specification are replaced by iterative approaches such as an evolving list of requirements.

A comparison of the **NEA** assessment is below:

| **OCR GCSE (9-1) Design and Technology** | **Pearson GCSE (9-1) Design and Technology** |
| --- | --- |
| A single Non Exam Assessment (NEA) Iterative Design Challenge totalling 100 marks and worth 50% of the GCSE. | A single Non Exam Assessment (NEA) Contextual Challenge, totalling 100 marks, and worth 50% of the GCSE. |
| A guide time for completion of approximately 40 hours work. | There is no learning hours guide time for the completion of the design portfolio. |
| Marking criteria giving learners the opportunity to:* **Explore** to identify needs and requirements
* **Create** solutions to meet those needs
* **Evaluate** whether the needs have been met
 | Marking criteria giving learners the opportunity to:* **Investigate needs and research** to write a specification
* **Design ideas**, review them and develop a chosen idea
* **Make a prototype** check its quality
* **Evaluate a prototype** through testing
 |
| Student portfolios can be submitted as a physical document (supported by videos) or as a complete e-portfolio | Student portfolios can be hard copy or electronic equivalent, but must be either Adobe, Powerpoint or submitted on a CD. |
| Students must make a working prototype | Students must making a functioning design outcome, either highly finished product made as a proof of concept, or working scale models of a system. |
| Marks are awarded holistically recognising that the nature of the portfolio is non-linear. | Marks are awarded holistically recognising that the nature of the portfolio is non-linear. |
| 3 Contextual Challenges released on the 1st of June prior to NEA submission. | 3 published contextual challenges released on the 1st of June prior to NEA submission |
| A guide of 24 A3 pages of work is suggested, but this is not a restriction, so long as communication is relevant and concise. | Portfolios are recommended to be between 20 and 30 slides of A3 paper. |
| There is no restrictions of the number of photographs that may be included in the portfolio. | Photographs must be; coloured; well lit; high resolution, with a maximum of 20 photographs per project suggested. |
| Students are encouraged to take **calculated risks** by **managing competing priorities** when solving their identified **real world problems,** working in an **open ended fashion** not restricted by materials or processes to be used, r**egardless of the in-depth material area** the student may have covered.A truly iterative process in delivery and assessment. | Students are encouraged to use creativity and imagination to design and make prototypes that solve real and relevant problems, considering their own and others' needs, wants and values. |
| The NEA is assessed against 3 Assessment Objectives (AOs) split into 5 strands:* AO1 – Explore (Strand 1)
* AO2 – Create: Design thinking (Strand 2)
* AO2 – Create: Design communication (Strand 3)
* AO2 – Create : Final prototype (Strand 4)
* AO3 – Evaluate (Strand 5)
 | The NEA is assessed against 3 Assessment Objectives (AOs) split into 4 strands* AO1 Investigate (Assessment 1)
* AO2 Design (Assessment 2)
* AO2 Make (Assessment 3)
* AO3 Evaluate (Assessment 4)
 |
| **Across the 5 strands**, the assessor will first place the student in the most appropriate band for each aspect of the NEA work, before deciding the mark within that band. | Across the 4 assessment criteria grids, the assessor will first place the student in the most appropriate level (1-3), before deciding how well they meet the descriptors in that level, which will result in an indication of the mark to award. |
| The students NEA is scored based on the judgement that the work ***convincingly*** meets the statement, ***adequately***  meets the statement, or ***just*** meets the statement.All statements are given equal weighting. | The students NEA is scored based on a rough judgments that the work is basically/superficially, generally/some, or fully meeting the statements within three levels, 1, 2, and 3. |
| **Investigations of the context**Students must select a contextual challenge and use this as an authentic starting point to explore real world problems and opportunities for stakeholders in relation to their interests. | **Investigation of needs and research**Students need to identify the needs of end user, outline the problem, investigate existing products, and carry out a range of research strategies including marker research, context, possible materials and sustainable issues. |
| **Investigations of user and stakeholder needs and wants and the outlining of stakeholder requirements (nontechnical specification)**Students are encouraged to iteratively identify the stakeholder requirements that cover specific needs, wants and interests. This will lead to the development of a relevant design brief. |
| **Investigations of existing products and design practices**Students are encouraged to explore at any time, existing products and practice that might inform the design process no matter at which stage it is at.  |
| **Exploration of materials and possible technical requirements**Students are challenged to consider different materials in order to inform the technical features of their design solution. |
| **Design brief**Students must write their own unique design brief in response to their chosen contextual challenge, that outlines their response to that challenge and how it will meet the needs and wants of related stakeholders.  | **Product Specification**The student must produce a design brief to address all needs, and produce statements that include; form; function; user requirements; performance requirements; material and component requirements; scale of production; scale of production; cost; sustainability; and performance requirements. |
| **The Technical Specification**Students present their solution through a technical specification, which is the combination of both written and graphical information of how the solution meets the stakeholder requirements, and detailed sufficient that a third party could produce the final prototype. |
| **Generating Initial Ideas**Students must conceive ideas that respond to identified problems and requirements and that offer innovative challenge, producing a minimum of 10 ideas. Students should acknowledge when others provide ideas that influence the iterative process. | **Design Ideas**Students must produce a range of ideas that address the criteria in the design brief and product specification, considering budget, aesthetics, culture and sustainability, designing for different materials, components, processes and techniques.  |
|  | **Review of Ideas** Students must analyse/evaluate ideas, determine ideas to take forward, and modify ideas to fit.  |
| **Design Developments**Students must narrow down and improve ideas through iteration, resolving identified requirements technically and conceptually. A minimum of 2 developments are required, but the quality and range of work to find suitable solutions is dependent on the students’ level of thinking. | **Development of design ideas into a chosen design**Students must consider user group needs and preferences, consider the whole product, model and simulate, analyse ideas, and modify. |
| **Quality of chronological progression**Students are awarded marks for working systematically and evidencing their progress with real time evidence. | **Communication of design ideas**Students must use a range of communication techniques including sketches such as freehand and annotated; cut and paste; digital photography; 3D models; isometric/oblique projection; perspective drawing; orthographic/exploded views, assembly drawings; system/schematic diagrams and CAD to communicate clearly.  |
| **Quality of initial ideas**Students are awarded marks for their effective and consistent communication of their initial thinking. |
| **Quality of design developments**Students are awarded marks for using a range of communication techniques when developing design concepts. |
| **Quality of final design solution**Students are awarded marks for formal presentation of their design solution with suitable clarity for a 3rd party.  |
| **Developing a Final solution**Students must consider the look and function of a final prototype as if it were being developed as a potential product, and be the result of experimentation of processes and techniques through modelling and testing. Digital design and manufacture must be used here or in the final prototype. |  |
| **Critical Thinking**Students must systematically work through identified problems and show evidence of innovation throughout the design process. | **Review of chosen design**The student must product a solution that meets the brief and specification, considering materials, techniques and processes, and incorporating feedback from research. |
| **Producing a final prototype**Students must produce the outcome authentically and safely. The most suitable alternative processes available should be used to deliver a high quality outcome. Students must use digital design and manufacture here if it has not been used in the iteration work previously. Hand tools and machinery are also required to be used either here or through earlier modelling. | **Manufacture**Students must produce a prototype that meets requirements, and show a range of making skills. They should select and apply materials, tools, techniques, fixings, templates, jigs/patterns, components, surface treatments and work safely.Students must measure the degree of prototype performance and how accurately it is assembled and finished. |
|  | **Quality and accuracy**Students must measure the degree to which their prototype performs, and how accurately they have assembled and finished a high quality product.  |
| **Analysing validity of the final prototype**Students must evaluate the prototype through stakeholder opinions against the technical specification, sought through meaningful sources outside of the school environment, ideally in context. | **Testing and Evaluating**Students must analyse the prototype against the specification, analyse the results, evaluate how it meets the specification, and consider sustainability through a Life Cycle Assessment. |

### The Explicit Pearson Specification Content

Below you will find all the information you need to start teaching OCR GCSE (9-1) Design and Technology, with the freedom to deliver areas of learning without the constraint of specific content that must be covered and will be assessed within the exam paper. We have mapped below how our approach allows centres to not fixate on covering specific content.

### Pearson Explicit Content list

| **Pearson GCSE (9-1) Design and technology Specification Content** | **Pearson GCSE (9-1) Explicit Content not Explicitly in the OCR specification** | **Matched OCR GCSE (9-1) Design and technology Specification** | **OCR GCSE (9-1) Explicit or illustrative Content** |
| --- | --- | --- | --- |
| 1.1 The impact of new and emerging technologies applying a breadth of technical knowledge and understanding of characteristics in relation to; Industry; enterprise; sustainability; people; culture; society; environment; and production techniques and systems. | Industry:a unemploymentb workforce skill setc demographic movementd science and technology parks.Enterprise:a privately-owned businessb cloud fundingc government funding for new  business start-upsd not-for-profit organisations.Sustainability:a transportation costsb pollutionc demand on natural resourcesd waste generated.People:a workforceb consumersc childrend people with disabilitiese wage levelsf highly-skilled workforceg apprenticeships.Culture:a population movement within  the EUb social segregation/clustering  within ethnic minorities.Society:a changes in working hours and  shift patternsb Internet of Things (IoT)c remote workingd use of video conference  meetings.Environment:a pollutionb waste disposalc materials separationd transportation of goods around  the worlde packaging of goods.Production techniques and systems:a standardised design and  componentsb just-in-time (JIT)c lean manufacturingd batche continuousf one offg mass. | 3.1 New and Emerging technologies and their impact on industry, enterprise, the circular economy, lifestyle, culture, society, the environment and sustainability | **Explicit content:**3.1 Industry and enterprise such as circular economy, people, lifestyle, culture and society, the environment and sustainability. |
| 1.2 How the critical evaluation of new and emerging technologies informs design decisions; considering contemporary and potential future scenarios from different perspectives, such as ethics and the environment | Design Decisions:Budget, timescale, who the product is for, the materials used, manufacturing capabilitiesContemporary and Future Scenarios:* Natural disasters
* Medical advances
* Travel
* Global Warming
* Communication

Ethics:* Where it was made
* Who it was made by
* Who will it benefit
* Fair trade products

Environmental perspectives:* Use of materials
* Carbon Footprint
* Energy usage/consumption during manufacture and transportation
* Life cycle analysis (LCA)
 | 2.2 New and Emerging Technologies and their influence on contemporary and future scenarios relating to ethics, the environment and product enhancement.7.6 New and emerging technologies with implications for production processes. | **Illustrative content:**2.2 Ethics, the environment and product enhancement7.6a. Economies of scale, Disruptive Technology - 3D printing and robotics. |
| 1.3 How energy is generated and stored in order to choose and use appropriate sources to make products and power systems.* Sources, generation and storage
* Powering systems
* Factors to consider
 | Sources, generation and storage of energy:* Fossil fuels - oil, gas, coal
* Biofuels
* Tidal
* Wind
* Solar
* Hydroelectric

Powering systems:* Batteries and cells
* Solar cells
* Mains electricity
* Wind power

Power Systems:* Portable power sources
* Environmental Impact
* Power output
* Circuit/system connections
* Cost
 | 3.2 Energy sources for products and power systems, including renewable and non-renewable sources. | E**xplicit/illustrative content:**3.2 non |
| 1.4 Developments in modern and smart materials, composite materials and technical textiles.* Modern and smart materials
* Composites
* Technical textiles
 | Modern and Smart materials:* Shape memory alloys
* Nanomaterials
* Reactive glass
* Piezoelectric materials
* Temperature-responsive polymers
* Conductive inks

Composites:* Concrete
* Plywood
* Fibre/carbon/glass
* Reinforced Polymers
* Robotic materials

Technical Textiles:* Agro-textiles
* Construction textiles
* Geo-textiles
* Domestic textiles
* Environmentally friendly textiles
* Protective textiles
* Sports textiles
 | 5.1 The main categories of materials including* Paper and boards
* Natural and manufactured Timber
* Ferrous and Non-ferrous Metals
* Thermo and Thermosetting polymers
* Textile fibres and fabrics
* Modern and Smart Materials, composites, technical textiles
 | **Explicit/illustrative content:**5.1 Papers and boards, including:i. papers, e.g. layout and cartridge, different weights and costingii. card, e.g. carton board, bleached card and corrugated card iii. boards/sheets, e.g. foam board, Styrofoam and polypropylene sheet iv. laminated layers, e.g. reflective surfaces. Natural and manufactured timber, including: i. hardwoods, e.g. oak, birch and teak ii. softwood, e.g. pine, cedar and spruce iii. manufactured boards, e.g. MDF, plywood and block board. Ferrous and non-ferrous metals, including:i. ferrous metals, e.g. iron, mild steel and stainless steel ii. non-ferrous metals, e.g. aluminium, copper and tiniii. alloys, e.g. brass, pewter and tin/lead solder. Thermo and thermosetting polymers, including: i. thermo polymers, e.g. PET, HDPE, PVC, LDPE, PS, PP, ABS, acrylic and TPE ii. thermosetting polymers, e.g. silicone; epoxy resin and polyester resin. Textile fibres and fabrics, including: i. natural fibres, e.g. cotton, wool and silk ii. synthetic fibres, e.g. nylon, polyester and acryliciii. mixed/blended fibres, e.g. cotton/polyesteriv. woven, non-woven and knitted fabrics.Modern and smart materials such as graphene, super alloys, biopolymers and nano-materials. Composite materials and their purpose in relation to contrasting applications. Technical textiles used in different types of products dependent on context |
| 1.5 The functions of mechanical devices used to produce different sorts of movements, including the changing of magnitude and the direction of forces.* Types of movement
* Classification of levers
* Linkages
* CAMs
* Followers
* Pulleys and belts
* Cranks and sliders
* Gear types
 | Types of movements:* Linear
* Reciprocating
* Rotary
* Oscillation

Levers:* Class 1, 2 and 3
* Mechanical advantage
* Velocity ratio
* Load
* Effort
* Efficiency

Linkages:* Bell crank
* Reverse motion linkages

Cams:* Pear shaped
* Eccentric
* Drop

Followers:* Roller
* Knife
* Flat followers

Pulleys and Belts:* V-belt
* Velocity ratio
* Input and output speeds

Cranks and slidersGear types:* Simple and compoundIdler
* Revolutions per minute
* Bevel gears
* Rack and Pinion
 | 6.3 Controlled movement through types of motion, forces, and mechanical devices that change the magnitude and direction of a force. | **Explicit content**:6.3a. rotary, linear, oscillating, reciprocating. load, effort, fulcrum. cams, gears, pulleys and belts, levers, linkages |
| 1.6 How electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to product a range of outputs.* Sensors
* Control devices
* Outputs
 | Sensors:* Sensors in electronic systems
* Light dependent Resistors
* Thermistors

Control devices and Components:* Switches in electronic systems
* Transistors
* Resistors

Outputs:* Outputs in electronic systems
* Buzzers
* Light emitting diodes
 | 6.4 Electronic systems, sensors and control devices, inputs and outputs, and programmable components. | E**xplicit/illustrative content:**6.4 Non |
| 1.7 The use of programmable components to embed functionality into products in order to enhance and customise their operation.* The use of flowcharts
* Switching outputs/inputs
* Analogue inputs
* Simple routines
 | * Make use of flowcharts
* Switch outputs on/off in relation to inputs and decisions
* Process and respond to analogue inputs
* Simple routines to control outputs with relays, loops and counts
 |  |
| 1.8 The categorisation of the types, properties and structure of ferrous and non-ferrous metals* Ferrous
* Non ferrous
* Properties
 | Ferrous Metals:* Mild steel
* Stainless steel
* Cast iron

Non-Ferrous metals:* Aluminium
* Copper
* Brass

Properties:* Ductility
* Malleability
* Hardness
 | 5.1 The main categories of materials including* Paper and boards
* Natural and manufactured Timber
* Ferrous and Non-ferrous Metals
* Thermo and Thermosetting polymers
* Textile fibres and fabrics
* Modern and Smart Materials, composites, technical textiles

5.2 Characteristic properties of the main material categories, their physical working properties, and factors including function, aesthetics, environment, availability, cost, social, cultural and ethical considerations. | **Explicit/illustrative content:**5.1 Papers and boards, including:1. papers, e.g. layout and cartridge, different weights and costing
2. ii. card, e.g. carton board, bleached card and corrugated card
3. boards/sheets, e.g. foam board, Styrofoam and polypropylene sheet
4. laminated layers, e.g. reflective surfaces. Natural and manufactured timber, including:
* hardwoods, e.g. oak, birch and teak
* softwood, e.g. pine, cedar and spruce
* manufactured boards, e.g. MDF, plywood and block board. Ferrous and non-ferrous metals, including:
* ferrous metals, e.g. iron, mild steel and stainless steel
* non-ferrous metals, e.g. aluminium, copper and tin
* alloys, e.g. brass, pewter and tin/lead solder. Thermo and thermosetting polymers, including: - thermo polymers, e.g. PET, HDPE, PVC, LDPE, PS, PP, ABS, acrylic and TPE
* thermosetting polymers, e.g. silicone; epoxy resin and polyester resin. Textile fibres and fabrics, including:
* natural fibres, e.g. cotton, wool and silk
* synthetic fibres, e.g. nylon, polyester and acrylic
* mixed/blended fibres, e.g. cotton/polyester
* woven, non-woven and knitted fabrics.
1. Modern and smart materials such as graphene, super alloys, biopolymers and nano-materials.
2. Composite materials and their purpose in relation to contrasting applications.
3. Technical textiles used in different types of products dependent on context
 |
| 1.9 The categorisation of the types, properties and structure of paper and boards.* Paper
* Board
* Properties
 | Paper:* Copier paper
* Cartridge paper
* Tracing paper

Board:* Folding boxboard
* Corrugated board
* Solid white board

Properties:* Flexibility
* Printability
* Biodegradability
 |
| 1.10 The categorisation of the types, properties and structure of thermoforming and thermosetting polymers.* Thermoforming
* Thermosetting
* Properties
 | Thermoforming polymers:* Acrylic
* High Impact Polystyrene
* Biodegradable polymers – biopol

Thermosetting polymers:* Polyester resin
* Urea Formaldehyde

Properties:* Insulator of heat
* Insulator of electricity
* Toughness
 |
| 1.11 The categorisation of types, properties and structure of natural, synthetic, blended and mixed fibres, and woven, non-woven and knitted textiles.* Natural
* Synthetic
* Woven
* Non-woven
* Knitted
* Properties
 | Natural:* Animal – wool
* Vegetable – cotton

Synthetic:* Polyester
* Acrylic

Woven:* Plain – calico
* Twill – denim

Non-woven:* Felted wool fabric
* Bonded fibres/webs

Knitted:* Weft-knitted fabrics
* Warp knitted fabrics

Properties:* Elasticity
* Resilience
* Durability
 |
| 1.12 The categorisation of the types, properties and structure of natural and manufactured timbers.* Natural softwoods
* Natural hardwoods
* Manufactured timbers
* Properties
 | Natural timbers hardwoods:* Oak
* Mahogany
* Beech
* Balsa

Natural timbers softwoods:* Pine
* Cedar

Manufactured timbers:* Plywood
* Medium Density Fibreboard

Properties:* Hardness
* Toughness
* Durability
 |
| 1.13 All design and technological practice takes place within contexts which informs outcomes | Properties of materials and or componentsAdvantages and disadvantages of materials and components and manufacturing processesJustification of choices | 1.1 Consider and Explore the context, identify primary users and stakeholders, investigate social, cultural, moral and economic factors as opportunities or constraints. | E**xplicit/illustrative content:**1.1 Non |
| 1.14 Investigate environmental, social and economic challenges when identifying opportunities and constraints that influence the processes of designing and making.* Social, ethnic and economic groups
* Environmental, social and economic issues
* Green designs
* Recycling/reusing
* Human capacity
* Cost of materials
* Manufacturing capability
* Environmental Impact
 | Respect for different social, ethnic and economic groups* Appreciation of environmental, social and economic issues including fair trade, carbon offsetting, product disassembly and disposal
* Green designs
* Recycling and Reusing
* Human Capacity
* Cost of materials
* Manufacturing capability
* Environmental impact - life cycle analysis (LCA)
 | 3.3 Considerations of environment, social and economic factors relating to environmental initiatives, fair trade, social and ethical initiatives and global sustainable developments8.1 Costings and availability of materials for designing, including quantities, cost and size. | **Explicit content:**3.3 Environmental initiatives, fair trade social and ethical awareness, global sustainable development8.1a. Commercial viability, different stakeholder needs and marketability. Calculate quantities |
| 1.15 Investigate and analyse the work of past and present professionals and companies in order to inform design.Form, function, client/user, performance, materials/components, scale, sustainability, aesthetics, marketability, innovation.Alessi, Apple, Heatherwick Studio, Joe Casleyy-Hayford, Pixar, Raymond Loewy, Tesla, Zaha Hadid. | Specification criteria:* Form
* Function
* Client and user requirements
* Performance requirements
* Materials and components/systems
* Scale of production/cost
* Sustainability
* Aesthetics
* Marketability
* Considerations of innovation

Past and present designers and companies:* Alessi
* Apple
* Heatherwick Studio
* Joe Casely-Hayford
* Pixar
* Raymond Loewy
* Tesla
* Zaha Hadid
 | 2.1 Explore existing solutions by looking at:* Materials, components and processes
* Fashion, trends and taste/style
* Marketing and branding
* Society
* Usability
* The Environment and life cycle assessment
* The work of past and present professionals
 | **Explicit content:**2.1 Materials, components, processes, fashion, trends, taste, style, marketing, branding, society, usability, environment, lifecycle, past and present professionals. |
| 1.16 Use different design strategies to generate initial ideas and avoid design fixation.CollaborationUser Centred DesignSystems thinking | Design strategies including:* Collaboration
* User-centred design
* Systems Thinking
 | 4.2 Sourcing information and problem solving thinking focused on user centred design and systems thinking | **Explicit content:**4.2 User Centred Design and Systems Thinking |
| 1.17 Develop, communicate, record and justify design ideas, applying suitable techniques | Develop/use a range of communication techniques/media including:1. freehand sketching (2D and/or 3D)
2. annotated sketches
3. cut and paste techniques
4. digital photography/media
5. 3D models
6. isometric and oblique projection
7. perspective drawing
8. orthographic and exploded views
9. assembly drawings
10. system and schematic diagrams
11. computer-aided design (CAD) and other specialist computer drawing programs.

Record and justify design ideas using written techniques | 4.1 Communication techniques including 2D/3D sketches, sketch modelling, exploded drawings, mathematical modelling and flow charts | **Illustrative content:**4.1 2D/3D sketching, sketch modelling, exploded drawings, mathematical modelling and flow charts. |
| 2.1 Design Contexts | Designing and modifying a productApply knowledge and understanding of “chosen material category”, components and manufacturing processes. |  |  |
| 2/3/4/5/6/7/8.2 The sources, origin as, physical and working properties of "chosen material category" and their social and ecological footprint. | The advantages and disadvantages and applications of materials in order to discriminate between and select them.Additional materialsSources and origins of materials to specific geographical locationsAdditional physical characteristicsAdditional working propertiesSocial footprint- trend forecasting- impact of extraction and material production on communities and wildlife- ease and difficulty of recycling and disposalEcological footprint:- sustainability- extraction and erosion of the landscape- processing- transportation- wastage- pollution | 5.3 Sourcing or origins of materials, the ecology of processing, their lifecycle and end of life options. | **Illustrative content:**5.3* 1. N/A
	2. extraction and conversion
	3. mining, harvesting, manufacturing and transporting
	4. N/A
	5. recycling, sustainability schemes, eco-materials, upcycling.
 |
| 2/3/4/5/6/7/8.3 The way in which the selection of "chosen material category" is influenced.Aesthetics factorsEnvironmental factorsAvailability factorsCost factorsSocial factorsCultural/ethical factors | Aesthetic factors:* Form
* Colour
* Texture

Environmental factors:* Sustainability
* Pollution
* Energy consumption in production
* Corrosion or decay

Availability factors:* Use of stock materials
* Specialist materials
* Impact of market price on world consumption and demand

Cost factors:* quality of material
* manufacturing processes
* commodity prices on London exchange
* cost of recycling in comparison to cost of producing new material

Social factors:* use of different social groups
* trends/fashion
* popularity

Cultural and ethical factors:* avoiding offence
* suitability of intended market
* consumer society
* the effect of mass production
* - built in product obsolescence
 | 5.2 Characteristic properties of the main material categories, their physical working properties, and factors including function, aesthetics, environment, availability, cost, social, cultural and ethical considerations.8.1 Costings and availability of materials for designing, including quantities, cost and size. | **Explicit content:**5.2* 1. density, strength, hardness, durability, strength to weight ratio, resistance to chemicals and weather, flammability, absorbency, thermal and electrical conductivity.
	2. N/A
	3. Function, aesthetics, environmental, cost, social, cultural and ethical considerations.

Explicit content:8.1* 1. Commercial viability, different stakeholder needs and marketability
	2. Calculate quantities
 |
| 2/3/4/5/6/7/8.4 The impact of forces and stresses on "chosen material category" and how they can be reinforced and stiffened.Forces and stressesReinforcement/stiffening | A full list of forces and stresses for the chosen material categoryA full list of reinforcement/stiffening techniques for the chosen material category | 6.1 Material structural integrity, forces and stresses | **Illustrative content:**6.1* 1. Reinforced and stiffened to withstand forces and stresses
	2. Triangulation, boning, darts, layering, plastic webbing, reinforcing
 |
| 2/3/4/5/6/7/8.5 The stock forms, types and sizes in order to calculate and determine the quantity of "chosen material category" required.Stock forks/typessizes | A full list of stock forms/types and sizes for the chosen material category | 5.4 Common forms of materials, their standard units of measure, weight and size, stock forms and standard components. | **Explicit/illustrative content:**5.4 Weights and sizes Stock forms - lengths, sheets, pellets, reels, rolls and rodsStandard components - paper and boards, e.g. clips, fasteners, bindings timber, e.g. hinges, brackets, screwsmetals, e.g. bolts, rivets, hingespolymers, e.g. caps, fasteners, boltsfibres and fabrics, e.g. zips, buttons, popperssystem components, e.g. resistors, capacitors, diodes, transistors and drivers, microcontrollersmechanical components, e.g. gears and cams, pulleys and belts, levers and linkages. |
| 2/3/4/5/6/7/8.6 Alternative processes that can be used to manufacture "chosen material category" products to different scales of production.ProcessesScales of productionTechniques for quantity production | A full list of processes for the chosen material categoryScales of production including:* One off
* Batch
* Mass production
* Continuous

Techniques for production:* Marking out
* Jigs
* Fixtures
* Templates
* Patterns
* Stencils
* Photocopying
* Computer Aided Manufacturing
* Quality Control
* Working with Tolerance
* Efficient cutting to minimise waste
 | 7.5 Process variation between different scales of production. | **Explicit/illustrative content:**7.51. batch production, mass production, lean manufacturing and just-in-time (JIT) methods
2. paper and boards, e.g. offset lithography, screen process printing, digital printing, vinyl cutting, die cutting timber, e.g. CNC routers, sawing and steam bending machines and lathes metals, e.g. CNC milling, turning, sheet metal folding, pressing and stampings, and die casting polymers, e.g. compression moulding, injection moulding, vacuum forming, rotational moulding, extrusion and blow moulding fibres and fabrics, e.g. band saw cutting, flatbed and rotary screen printing, digital lay planning, industrial sewing machines and overlockers, automated presses and steam dollies design engineering, e.g. laser cutting, rapid prototyping and 3D printing.
 |
| 2/3/4/5/6/7/8.7 Specialist techniques, tools, equipment and processes that can be used to shape, fabricate, construct and assemble a high-quality "chosen material category" prototype.Tools and equipmentShapingFabricating/constructingAssembling | A full list of tools and equipment, shaping techniques, and fabricating/assembling/constructing approaches, for the chosen material category | 7.1 Modelling processes and techniques7.2 Specialist techniques, hand tools and equipment to shape, fabricate, construct and assemble high quality prototypes.7.3 Achieving accuracy when making prototypes and products | **Illustrative content:**7.1 N/A**Explicit/illustrative content:**7.2a.1. wastage - paper and boards, e.g. cutting and punching of timber, e.g. sawing, drilling and turning of metals, e.g. sawing, drilling, shearing and turning of polymers, e.g. sawing and drilling of fibres and fabrics, e.g. cutting and shearing of design engineering, e.g. etching\*.
2. addition - paper and boards, e.g. adhesion and laminating timber, e.g. adhesion, joining and laminating metals, e.g. adhesion, welding/brazing and riveting polymers, e.g. adhesion and heat welding fibres and fabrics, e.g. sewing, bonding and laminatingdesign engineering, e.g. soldering\*.
3. deforming and reforming - paper and boards, e.g. perforating and folding timber, e.g. steaming and pressing metals, e.g. pressing, bending and casting polymers, e.g. moulding, vacuum forming and line bending fibres and fabrics, e.g. heat treatments, pleating and gathering design engineering, e.g. moulding\*

**Explicit content:**7.3 Measuring points, lines and surfacesTemplates, jigs or patternsWorking in tolerancesCutting to minimise waste. |
| 2/3/4/5/6/7/8.8 Appropriate surface treatments and finishes that can be applied to "chosen material category" for function and aesthetic purposes.Surface finishes and treatments | A full list of surface finishes and treatments for the chosen material category. | 6. 2 Material finishing for function, durability and aesthetics | **Explicit content:**6.2 Surface treatments for function, durability, resistance, environment and aesthetics |
|  |  | 6. 2 Material finishing for function, durability and aesthetics |  |
|  |  | 7.4 The use of digital tools to develop ideas |  |
|  |  | 1. 2 Consider usability and user interaction as an impact on lifestyle, ease of use, inclusivity, ergonomics, anthropometrics and aesthetic considerations. |  |

### Want to switch to OCR?

If you’re an OCR-approved centre, all you need to do is download the specification and start teaching. Your exams officer can complete an intention to teach form which enables us to provide appropriate support. When you’re ready to enter your students, you just need to speak to your exams officer to:

Make estimated entries by **10th October** so we can prepare the question papers and ensure we’ve got enough examiners.

Make final entries by **21st February**. If you are not already an OCR-approved centre please refer your exams officer to the centre approval section of our admin guide.

### Next steps

1. Familiarise yourself with the specification, sample assessment materials and teaching resources on the Design and Technology qualification page of the OCR website.
<https://www.ocr.org.uk/qualifications/gcse/design-and-technology-j310-from-2017/>
2. Browse the online delivery guides for teaching ideas.
<https://www.ocr.org.uk/qualifications/gcse/design-and-technology-j310-from-2017/planning-and-teaching/>
3. Get a login for our secure extranet, Interchange – this allows you to access the latest past/practice papers and use our results analysis service, Active Results.
<https://interchange.ocr.org.uk>
4. Sign up to receive subject updates by email.
<http://www.ocr.org.uk/i-want-to/email-updates>
5. Sign up to attend a training event or take part in webinars on specific topics running throughout the year and our QandA webinar sessions every half term.
<https://www.cpdhub.ocr.org.uk>
6. A Contact your OCR Subject Advisor to find out about arranging a local network meeting with other centres in your region. These are hosted at the end of the school day in a school or college near you, with teachers sharing best practice and subject advisors on hand to lead discussion and answer questions.
design.technology@ocr.org.uk

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