T-LEVELS | IfATE Institute for Apprenticeships and Technical Education

T LEVEL

Technical Qualification in Craft and Design

Specification

First teaching from September 2024

Version 1.0 – April 2024

Pearson

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All information in this specification is correct at time of publication.

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Contents

1 Introducing the qualification

T Level programme

T Levels are two-year, Level 3 study programmes that follow the study of GCSEs and Technical Awards and offer an alternative to A Levels and Apprenticeships.

T Levels combine classroom theory, practical learning and a minimum 315 hours of industry placement with an employer. The work placement ensures students have real experience of the workplace.

T Level programmes are developed in collaboration with employers so that the content meets the needs of industry and prepares students for work. T Levels provide the knowledge and experience needed to progress to highly skilled employment, an Apprenticeship or higher-level study, including university.

What is the Technical Qualification (TQ)?

The *T Level Technical Qualification in Craft and Design* is the main classroom-based element of the T Level. Students will learn using a curriculum that has been shaped by industry experts.

During the two-year programme, students will acquire the core knowledge that underpins each industry. They will develop occupationally specific skills that will allow them to enter skilled employment within a specific occupation.

Technical Qualification and Outline Content

The Outline Content for the *T Level Technical Qualification in Craft and Design* has been produced by T Level panels of employers, professional bodies and Providers. It is based on the Apprenticeship Standards.

Pearson has used the Outline Content to form the basis of the Technical Qualification specification. This includes:

- elaboration of the Outline Content to produce a specification that gives Providers an accurate interpretation of what needs to be taught and assessed
- enabling students to achieve threshold competence in relation to the Occupational Specialist component(s)
- the integration of English, maths and digital competencies.

Employer and Provider panels

Pearson engaged with employer and Provider panels throughout the development of the Technical Qualification. This ensured:

- the content gives students quality preparation to help them progress
- assessments are realistic and assess the knowledge and skills that are important to employers
- the technical qualification meets the needs of Providers.

Pearson is grateful to all university and further education lecturers, teachers, employers, professional body representatives and other individuals who have generously shared their time and expertise to help us develop these new qualifications.

Employers, professional bodies and Providers who contributed to the development of the Technical Qualification include:

- The Association for Contemporary Jewellery
- National Association of Shopfitters and Interior
- Morley College London
- Phoenix Pottery
- Worldskills UK
- Hockley Mint Ltd
- Lee Dawson
- UK Fashion and Textiles Association
- Sarah Atkinson
- Worshipful Company of Upholders
- Association of Master Upholsterers & Soft Furnishers (AMUSF)
- Kirsty Lockwood Furnishings
- Twist and Shout Design
- Furniture Makers Company
- Tim Beasley Sculpture, Moulding & Casting
- Gayle Atkins Ethical Fashion
- Thornhill & Co. Design & Photography
- The Argentum Design Company

Qualification purpose

This Technical Qualification is for T Level students who are undertaking the T Level in Craft and Design. It is intended for students who want to progress to a career in the craft and design sector.

The purpose of the *T Level Technical Qualification in Craft and Design* (Level 3) is to ensure students have the knowledge and skills needed to progress into highly skilled employment, an Apprenticeship or higher-level study, including university, within the specialist area of craft and design.

At the end of the Technical Qualification, students are expected to demonstrate threshold competence, meaning that they have gained the core knowledge

and skills related to craft and design and are well placed to develop full occupational competence with additional development and support once in employment in the craft and design sector.

Student profile and progression

Students undertaking this Technical Qualification will be 16–19 years old and in full-time education.

The typical student has:

- a clear idea about the industry sector in which they wish to pursue a career
- an idea of the type of job role they would like to explore as a career
- chosen not to immediately pursue an Apprenticeship at Level 3 but may be interested in later progression to an Apprenticeship at Level 4+.

This Technical Qualification aligns to the Bespoke Furniture Maker, Craft Assistant, Garment Maker and Jewellery and Silversmithing Level 3 Apprenticeships and therefore supports progression to entry-level jobs, which could include:

- jewellery designer
- jewellery maker
- furniture restorer
- furniture designer
- furniture maker
- wardrobe assistant
- dressmaker
- fashion design assistant
- tailor
- textile designer
- interior designer
- ceramics designer
- ceramics maker.

Alternatively, students could progress to the Level 3 Bespoke Furniture Maker, Craft Assistant, Garment Maker and Jewellery and Silversmithing Apprenticeships to develop and gain certification of their occupational competence, or they could progress to higher-level Apprenticeships.

Where students may not have access to an Apprenticeship or would prefer a more academic route, they could progress to relevant Higher National Certificate (HNC) or Higher National Diploma (HND) programmes or degree programmes.

Students should always check the entry requirements for each degree programme with the relevant higher education provider.

2 Qualification summary and structure

Summary

Qualification title	T Level Technical Qualification in Craft and Design (Level 3)
Qualification number (QN)	610/4091/5
First teaching	September 2024
Total Guided Learning Hours (GLH)	1200 hours (360 hours core)
Total Qualification Time (TQT)	1460 hours (420 hours core)
Occupational Specialism(s)	• Ceramics Maker (840 GLH, 1040 TQT) • Textiles and Fashion Maker (840 GLH, 1040 TQT) • Jewellery Maker (840 GLH, 1040 TQT) • Furniture Maker (Maker) (840 GLH, 1040 TQT) • Furniture Maker (Upholsterer) (840 GLH, 1040 TQT)
Recommended age range	16–19
Grading information	Core and Employer Set Project (ESP) components are graded A*–E or unclassified. Occupational Specialism (OS) components are graded Pass, Merit, Distinction or unclassified. The overall grading is on a scale of Pass, Merit, Distinction, Distinction* or Unclassified. The overall grade is awarded by the Institute for Apprenticeships and Technical Education (IfATE).
Entry requirements	There are no formal prior learning requirements. It is the Provider's responsibility to ensure students recruited have a reasonable expectation of success. Students are most likely to succeed if they have qualifications at Level 2 (for example, five GCSEs at grade 4 and above including English and maths or a vocational Tech Award pass at Level 2). Students may demonstrate the ability to succeed in various ways. For example, they may have relevant work experience or may have shown specific aptitude through diagnostic tests or non-educational experience.

Qualification title	T Level Technical Qualification in Craft and Design (Level 3)
Assessment	• All assessments are externally set and marked by Pearson. • The core and ESP components are externally set and marked by Pearson. • The OS components are set by Pearson. These are marked by the Provider and then moderated by Pearson.

Assessment Structure

The *T Level Technical Qualification in Craft and Design* has two mandatory components.

1. Core component

This component covers the underpinning knowledge, concepts and skills that support threshold competence in the craft and design industry.

The content for the Core component is provided in *Section 3*.

Assessment component	Assessment method	Duration	Marks	Weighting	Timetable	Availability
Core Paper	Written examination	2.5 hours	120	60%	Set date/ time	June November
Employer Set Project	Externally set project	19.5 hours	132	40%	Set date/ time Windowed	May November

2. Occupational Specialism component

There are five Occupational Specialist components in this Technical Qualification.

These components cover the Occupational Specialist knowledge and skills required to demonstrate threshold competence for the specialism. The Occupational Specialism is assessed by a skills-related project that synoptically assesses the Performance Outcome skills and associated underpinning knowledge.

The content for the Occupational Specialist component is provided in *Section 4*.

Assessment component	Assessment method	Duration	Marks	Weighting	Timetable	Availability
Ceramics Maker	Externally set design and make project	66 hours and 50 minutes	189	68%	Windowed	March–May
	Externally set skills assessment task	21 hours	87	32%	Windowed	March–May
Textiles and Fashion Maker	Externally set design and make project	73 hours and 50 minutes	192	74%	Windowed	March–May
	Externally set skills assessment task	21 hours	66	26%	Windowed	March–May

Assessment component	Assessment method	Duration	Marks	Weighting	Timetable	Availability
Jewellery Maker	Externally set design and make project	66 hours and 50 minutes	186	71%	Windowed	March–May
	Externally set skills assessment task	20 hours and 30 minutes	75	29%	Windowed	March–May
Furniture Maker (Maker)	Externally set design and make project	69 hours and 50 minutes	192	78%	Windowed	March–May
	Externally set skills assessment task	19 hours and 30 minutes	81	22%	Windowed	March–May
Furniture Maker (Upholsterer)	Externally set design and make project	69 hours and 50 minutes	192	68%	Windowed	March–May
	Externally set skills assessment task	22 hours and 30 minutes	90	32%	Windowed	March–May

What does the qualification cover?

The Technical Qualification content has been designed from the Outline Content created by the Institute for Apprenticeships and Technical Education and the Craft and Design T Level panel.

We have used the Outline Content to create the Technical Qualification specification and assessment, which has been validated by our own panel of employers and Providers to ensure it is appropriate for the progression routes identified.

Students learn about the following topics:

- The creative economy
- The individual in the creative industries
- Cultural context and vocabulary
- Audience
- Legislation/Regulation
- Professionalism and ethics
- Equality, diversity and inclusion
- Research skills
- Project methodology and administration
- Continued professional development.

3 Core Component

The content of the Core component has the core skills mapped to where there are opportunities to develop them. The competencies and skills are not expected to be developed at every point where they are mapped; but using this guidance tutors will embed them into teaching to prepare students for the assessments in the Core component.

The core skills are assessed through the Employer Set Project. The core skills for this Core component are as follows.

Core Skill 1 (CS1) – Undertaking research

The student must be able to:

- assess and analyse the brief to identify key requirements
- identify the scope of research based on the brief's requirements:
  - timeframes
  - breadth of research
  - format of research findings and outcomes
- identify and gather appropriate and diverse sources to support fulfilment of the brief's requirements
- ensure accuracy of sources by reviewing reliability and validity factors:
  - author expertise
  - bias
  - opinion
  - fact-based
  - evidence-based
  - subjectivity
  - context
  - intended audience
  - date of publication
  - corroboration across sources
  - citations
  - cultural context
- comply with appropriate regulations and standards when gathering and using sources of information
- draw conclusions from researched information to develop an idea:
  - review cultural contexts
  - review equality, diversity and inclusion factors
- evaluate research findings against the brief's requirements
- record and present findings in an appropriate format

(E2, E4, E5, D1, D5, D6)

CS1: Core underpinning knowledge

Core element 3: Cultural context and vocabulary

Core element 4: Audience

Core element 5: Legislation/regulation

Core element 7: Equality, diversity and inclusion

Core element 8: Research skills

Core Skill 2 (CS2) – Generating ideas

The student must be able to:

- interpret the design brief and clarify expectations:
  - end user
  - parameters – budget, time, resource, quality
  - routes to market
- undertake research to determine:
  - cultural context
  - design influences
  - target audience
  - market and competitors
  - style and current trends
  - ethical sourcing and sustainability
- collate research findings and draw conclusions:
  - mind map
  - mood board
- generate initial ideas based on conclusions:
  - 2D drawings
  - 3D drawings
  - prototype
  - maquette
- scale model
- compare ideas to the design brief
- review, refine and reject ideas:
  - review ideas against: brief, brand tone of voice
  - consider feedback
  - assess diversity of ideas
  - review legal and regulatory compliance of materials used
  - assess influence of social, political, technological, ethical and economic factors on the ideas
  - consider environmental factors and sustainability best practice
- select proceedable ideas or series of ideas to present to client.

(E2, M1, M2, M9, D1, D2, D5, D6)

CS2: Core underpinning knowledge

Core element 1: The creative economy

Core element 2: The individual in the creative industries

Core element 3: Cultural context and vocabulary

Core element 5: Legislation/regulation

Core element 7: Equality, diversity and inclusion

Core element 8: Research skills

Core Skill 3 (CS3) – Communicating ideas

The student must be able to:

- identify the type of group to be communicated with:
  - audience/target market
  - peer group
  - specialists
- identify the composition of the group for the communication of initial ideas:
  - demographics
  - group size
  - level of technical understanding
- determine the purpose of the communication
- identify the requirements of the communication:
  - length
  - level of detail
  - delivery format
  - formal/informal
  - accessibility needs
- identify and justify an appropriate medium of communication based on the requirements
- apply the appropriate tools to support the delivery of the communication on the selected medium
- communicate and present initial ideas appropriately to meet the requirements of the group:
  - format of communication
  - accuracy of communication
  - clarity of communication.

(E1, E2, E3, E4, E5, E6, D1, D3, D4, D5, D6)

CS3: Core underpinning knowledge

Core element 2: The individual in the creative industries

Core element 4: Audience

Core element 7: Equality, diversity and inclusion

Core Skill 4 (CS4) − Developing ideas

The student must be able to:

- research and review the scope of creative requirements
- create planning documentation to support the development of ideas:
  - select appropriate project methodology
  - plan and schedule key activities
  - outline stages of progress review
  - discuss timescales
  - budget forecast
- research and select required resources to support the development of ideas:
  - consumables
  - equipment
  - personnel
- refine planning information:
  - budget
  - timeframes
  - documentation
- record and store planning documentation appropriate for the project.

(E2, E3, E4, E5, M5, M6, M9, M10, D1, D3, D5, D6)

CS4: Core underpinning knowledge

Core element 1: The creative economy

Core element 3: Cultural context and vocabulary

Core element 8: Research skills

Core element 9: Project methodology and administration

Core Skill 5 (CS5) − Working collaboratively with others

The student must be able to:

- identify the scope of the task
- identify personnel and skillset requirements
- establish collaborative working procedures
- adhere to workplace etiquettes
- facilitate collaborative group working:
  - agree requirements of communication
  - make reasonable adjustments to support inclusion and accessibility
  - ensure conflict resolution where appropriate
  - record decisions
- analyse and respond to feedback from collaborators appropriately.

(E4, E6, D1, D3, D4, D5)

CS5: Core underpinning knowledge

Core element 2: The individual in the creative industries

Core element 6: Professionalism and ethics

Core element 7: Equality, diversity and inclusion

Core Skill 6 (CS6) − Reflective practice

The student must be able to:

- assess their own performance within the task:
  - professional conduct
  - deliverables against targets
  - evaluate the success of tasks
  - identify areas of strength and weakness
  - propose alternative strategies for the future
  - evaluate areas for personal and/or professional development
- evaluate the success of the approach to the brief
- conduct skills gap analysis to identify areas for personal development
- research areas for further personal and/or professional development:
  - record and store professional development data in line with requirements
- record outcomes of evaluation appropriately to support development of future tasks.

(E2, E3, E4, E5, M5, M6, M10, D1, D4, D5, D6)

CS6: Core underpinning knowledge

Core element 3: Cultural context and vocabulary

Core element 5: Legislation/regulation

Core element 6: Professionalism and ethics

Core element 9: Project methodology and administration

Core element 10: Continued professional development

Content

Content area 1: The creative economy	
CK1.1	**The different creative and non-creative industries that form part of the creative economy and the responsibilities of creative roles** Students should be able to recall the different creative and non-creative industries that form part of the creative economy and the responsibilities of roles within the creative industry. 1.1.1 creative industries that form part of the creative economy – film, television (TV), broadcasting and video, publishing, music and the performing arts, digital, crafts and design. 1.1.2 non-creative industries that form part of the creative economy – legal, financial, logistical, marketing and communications, human resources. 1.1.3 responsibilities of roles: • business − commissioning, fund-raising, managing the workforce, budget and schedules, marketing, promotion and distribution • design − ideas generation, research, development of concepts, products and services • production − preparation for production, utilisation of resources, production and delivery of concepts, creating content, post-production • technical − ensuring that all materials, resources and equipment meet the required technical specifications for the commission, archiving.
CK1.2	**The characteristics of different types of organisations that operate within the creative economy** Students should be able to recall the characteristics of different types of organisations that operate within the creative economy. 1.2.1 sector skills bodies (for example, UK Fashion and Textiles (UKFT)): • comprised of key industry figures • not for profit or commercially driven • develop occupational standards • reduce skills gaps and increase performance in the sector. 1.2.2 creative bodies (for example, Creative UK, the Crafts Council): • not for profit or commercially driven • invest, develop and support creativity in businesses and individuals • champion interest of its members. 1.2.3 corporations: • legal entity separate from its owners • generally indicates a significant size of turnover and workforce. 1.2.4 limited companies: • private organisations where the liability of owners is limited to debt to the amount invested or guaranteed • deliver goods or services for profit.

	1.2.5 small and medium-sized enterprises (SMEs):
	• organisations whose staff numbers fall below a certain threshold:
	  o microenterprise: fewer than 10 employees
	  o small enterprise: 10 to 49 employees
	  o medium enterprise: 50 to 249 employees.
	1.2.6 not-for-profits:
	• operational drivers do not financially benefit board of directors or any individual
	• surplus finance reinvested in line with corporate social responsibility (CSR)
	• not eligible for charity tax relief.
	1.2.7 charities:
	• established for a charitable purpose for public benefit
	• organisation is subject to charity law and legislation
	• eligible for charity tax relief.
	1.2.8 freelancer:
	• specialist self-employed individual contributing to and supporting a range of projects
	• not affiliated with a sole employer.
	1.2.9 sole trader:
	• individual who runs and owns a company
	• can employ people to support with operations.

CK1.3	**The creative supply chain**
	Students should be able to:
	• recall the supply chain of the creative economy, including the production process and factors that need to be considered for delivering a product, content or service
	• demonstrate understanding of the benefits of the creative supply chain to the economy, how the production process operates and factors that need to be considered for delivering a product, content or service.
	1.3.1 supply chain of the creative economy:
	• production:
	  o creative workspaces and studios
	  o industrial sites
	• consumption – places where creative work is experienced, showcased, exhibited and sold:
	  o museums
	  o galleries
	  o libraries
	• economic impact:
	  o direct impact on the economy from producing and consuming the output from creative industries
	  o indirect impact on the wider economy through the supply chain.
	1.3.2 production process:
	• establishing the need for a product, content or service:
	  o research and development stage

	• ideation of the creative vision:
	  o generation and development of ideas and concepts
	  o gathering, processing and responding to initial feedback
	  o presenting or pitching ideas
	• execute:
	  o initial production planning
	  o sourcing of funding
	  o sourcing of materials, resources and services
	• pre-production stage:
	  o preparing materials and resources
	  o testing equipment and resources
	  o review of production schedule
	  o review of production planning
	  o planning human resources
	• production and post-production stage.
	1.3.3 factors that need to be considered for delivering of a product, content or service:
	• compliance with standards and legislation:
	  o copyright clearances
	  o quality assurance
	  o contributor consent
	  o health and safety compliance
	• distribution of a product, including exhibition, installation
	• archival:
	  o media files, including unedited source material and finalised media content files
	  o paperwork
	• results tracking to determine the success of the project, including audience feedback, reviews, ratings.

CK1.4	**The features of models used to monetise creative products and services in industry** Students should be able to: • recall the features of models used to monetise products and services in the creative industries • demonstrate understanding of the benefits and challenges of different models used to monetise products and services in the creative industries • consider different aspects of the models used to monetise products and services in the creative industries and how they interrelate. 1.4.1 commissioned: • creation of a bespoke product, content or service on request of commissioner • commission may come from individuals, businesses or governments. 1.4.2 self-generated: • income that is solely generated from the actions of an individual or business

	• revenue comes from direct sales of a product, content or service or ownership of intellectual property rights (IPR). 1.4.3 subscription: • agreement to receive/use products or services at set increments • revenue comes from retention of paying subscribers for recurring consumption of product, service or content.
CK1.5	**The common sources of finance and funding opportunities available within the creative industries** Students should be able to: • recall the common sources of finance and funding opportunities available within the creative industries • demonstrate understanding of the benefits and challenges of common sources of finance and funding opportunities available within the creative industries • consider different aspects of the common sources of finance and funding opportunities available within the creative industries and how they interrelate. 1.5.1 commercial – contractual financial support to help an organisation or individual: • funding opportunities: o investments o loans. 1.5.2 sponsorship – supports, advises or helps fund another person, organisation or project: • funding opportunities: o product placement o branded content o corporate sponsorship o individual sponsorship o brand collaboration. 1.5.3 incentives – payment or concession to encourage a required output or investment: • funding opportunities: o product placement o branded content o public and private schemes o public and private partnerships o tax relief. 1.5.4 crowdfunding – money raised through a group of contributors: • funding opportunities: o online campaigns, including purpose-built crowdfunding platforms/websites, social media campaigns. 1.5.5 grants – sum of money awarded to support development and operations: • funding opportunities: o public o private

	○ charities ○ foundations.
CK1.6	**The purpose of relevant bodies, trade associations and organisations that operate within them** Students should be able to: • recall the purpose of relevant bodies, trade associations and organisations that operate within them • demonstrate understanding of how different bodies undertake their purpose. 1.6.1 industry bodies – representative bodies that improve the service that the industry provides by developing future workforce and supporting industry innovation: • Crafts Council • Design Council • Arts Council England (ACE) • British Council • The National Association of Jewellers (NAJ) • British Ceramic Confederation (BCC) • British Furniture Confederation (BFC) • UK Fashion & Textile Association (UKFT) • Heritage Crafts Association (HCA). 1.6.2 guilds – organisations promoting the tradition of trades and crafts: • The Drapers' Company • The Goldsmiths' Company • Merchant Taylors' Company • The Haberdashers' Company • The Worshipful Company of Dyers • The Leather-sellers' Company • The Worshipful Company of Upholders of the City of London • The Framework Knitters Company • Furniture Makers' Company the furnishing industry's charity. 1.6.3 advisory bodies – boards or authorities that provide non-binding strategic advice and guidance across numerous creative areas: • Creative UK peer support networks. 1.6.4 regulatory bodies – sector-specific bodies outlining compliance guidelines and standards: • Advertising Standards Authority (ASA) • Health and Safety Executive (HSE) • Office for Product Safety and Standards • Anti Copying in Design (ACID). 1.6.5 governmental departments – deliver governmental policies and visions: • Trading Standards • Department for Digital, Culture, Media & Sport (DCMS).

Content area 2: The individual in the creative industries	

CK2.1	**The benefits of networking to individuals that operate within the creative industries**
	Students should be able to:
	• recall the benefits of networking to individuals that operate within the creative industries
	• demonstrate understanding of how networking benefits individuals that operate within the creative industries.
	2.1.1 benefits of networking to individuals:
	• professional:
	  ○ increased industry contacts
	  ○ enhanced personal and professional development
	  ○ increased industry knowledge, including market intelligence, competitor insight and sharing best practices
	  ○ gaining exposure and promoting a product, service or content
	  ○ enhanced reputation
	  ○ stimulating new opportunities
	• financial:
	  ○ increased work opportunities
	  ○ increased income.

CK2.2	**Strategies for self-marketing in the creative industries** Students should be able to: • recall the strategies for self-marketing in the creative industries • demonstrate understanding of the benefits and challenges of self-marketing to individuals that operate within the creative industries • consider different aspects of strategies for self-marketing in the creative industries and how they interrelate. 2.2.1 identify and highlight individual niche attributes: • interests, talents and passions • unique selling point (USP). 2.2.2 gain recognition and accreditation for expertise: • qualifications • endorsements of skills and knowledge. 2.2.3 proactively share experiences and knowledge: • vlogs/blogs • contribute to articles • speaking at events. 2.2.4 create a network of like-minded individuals: • social media • attend specialist groups. 2.2.5 support others in the industry: • offer advice and guidance • become a mentor • offer services to charity.

	2.2.6 be diverse: • portfolio career approach • make own opportunities • market in a range of sectors.
CK2.3	**Different roles in the creative industry** Students should be able to recall the different roles in the creative industry and the types of activity performed in the role. 2.3.1 research/development roles: • generating and developing ideas/creative vision • winning the contract, securing funding. 2.3.2 technician roles: • maintenance • technical support. 2.3.3 sales and distribution roles: • distributing products to customers • public relations. 2.3.4 marketing: • developing campaigns • advertising and publicising products and services.
CK2.4	**The roles, responsibilities and skills required of a range of common job roles within craft and design** Students should be able to: • recall the responsibilities and requirements of specific job roles within craft and design • demonstrate understanding of how the responsibilities and requirements of specific job roles operate within craft and design. 2.4.1 jewellery maker: • key responsibilities: o undertaking market research to inform initial design ideas o managing and controlling costing and budgeting for equipment, tools, materials, resources o managing end-to-end production process from content and idea generation to final product o working with different materials, tools and equipment, including precious metals o knowledge of physical properties of materials and their limitations, including malleability, weight, melting point o working to relevant legislation, standards and industry best practice o presenting ideas to clients and funders o interpreting a design brief and developing designs and original ideas in response o designing new product ideas o awareness of existing and emerging technologies o applying a range of techniques, including bench-made, casting

	○ applying reflective review and evaluation to all stages of the design processes • key requirements: ○ project management and evaluation ○ communicate ideas and designs to present and negotiate with clients and customers ○ ability to work alone or as part of a team ○ customer service ○ use appropriate production and technical vocabulary to document and communicate ideas ○ continuous learning, improving and upskilling. 2.4.2 ceramics maker: • key responsibilities: ○ undertaking market research to inform initial design ideas ○ managing and controlling costing and budgeting for equipment, tools, materials, resources ○ managing end-to-end production process from content and idea generation to final product ○ working with different materials, tools and equipment, including kiln, glazes ○ knowledge of physical properties of materials and their limitations, including shrinkage, malleability ○ working to relevant legislation, standards and industry best practice ○ presenting ideas to clients and funders ○ interpreting design briefs and developing designs and original ideas in response ○ designing new product ideas ○ awareness of existing and emerging technologies ○ applying a range of techniques, including throwing, slip casting ○ applying reflective review and evaluation to all stages of the design process • key requirements: ○ project management and evaluation ○ communicate ideas and designs to present and negotiate with clients and customers ○ ability to work alone or as part of a team ○ customer service ○ use appropriate production and technical vocabulary to document and communicate ideas ○ continuous learning, improving and upskilling. 2.4.3 furniture maker: • key responsibilities: ○ undertaking market research to inform initial design ideas ○ managing and controlling costing and budgeting for equipment, tools, materials, resources

	○ managing end-to-end production process from content and idea generation to final product ○ working with different materials, tools and equipment, including metal, wood, springs and foundation materials, hammer, chisel ○ knowledge of physical properties of materials and their limitations, including durability, tensile strength ○ working to relevant legislation, standards and industry best practice ○ presenting ideas to clients and funders ○ interpreting design briefs and developing designs and original ideas in response ○ designing new product ideas ○ awareness of existing and emerging technologies ○ applying a range of techniques, including welding, veneering ○ applying reflective review and evaluation to all stages of the design process • key requirements: ○ project management and evaluation ○ communicate ideas and designs to present and negotiate with clients and customers ○ ability to work alone or as part of a team ○ customer service ○ use appropriate production and technical vocabulary to document and communicate ideas ○ continuous learning, improving and upskilling. 2.4.4 textiles and fashion maker: • key responsibilities: ○ undertaking market research to inform initial design ideas ○ managing and controlling costing and budgeting for equipment, tools, materials, resources ○ managing end-to-end production process from content and idea generation to final product ○ working with different materials, tools and equipment including textiles, leather ○ knowledge of physical properties of materials and their limitations (for example, stretch, thickness) ○ working to relevant legislation, standards and industry best practice ○ presenting ideas to clients and funders ○ interpreting design briefs and developing designs and original ideas in response ○ designing new products ideas ○ awareness of existing and emerging technologies ○ applying a range of techniques, including stitching, embroidery ○ applying reflective review and evaluation to all stages of the design process

	• key requirements:
	  ○ project management and evaluation
	  ○ communicate ideas and designs to present and negotiate with clients and customers
	  ○ ability to work alone or as part of a team
	  ○ customer service
	  ○ use appropriate production and technical vocabulary to document and communicate ideas
	  ○ continuous learning, improving and upskilling.

CK2.5	**Employment models and their features used within the creative industries** Students should be able to: • recall the employment models and their features used within the creative industries • demonstrate understanding of the benefits and drawbacks of different employment models used within the creative industries • consider different aspects of the employment models and their features and how they interrelate. 2.5.1 direct employment model: • permanent contract – non-expiring contractual agreement • fixed-term contract – contractual agreement with a determined end date • project-based – hired for a specific project only • zero-hours/casual contract – ad hoc working patterns based on employer need, with no obligation to be offered work. 2.5.2 self-employment model: • freelancer – undertakes pieces of work for different employers • sole trader – business is run as an individual • sub-contractor – a third party that completes work on behalf of an organisation.
CK2.6	**The importance of financial acumen in supporting operations within creative industries** Students should be able to: • recall the reasons why it is important for people working within the creative industries to have financial acumen • demonstrate understanding of how having good financial acumen helps support specific operations within creative industries. 2.6.1 enables accurate creation of budgets. 2.6.2 supports appropriate production volumes. 2.6.3 supports appropriate setting of financial goals and actions. 2.6.4 supports cost-effective decision making when allocating finances. 2.6.5 enables effective monitoring of the financial health of a business or project, including cash flow and operating costs. 2.6.6 supports accurate forecasting, including predicted sales, costs. 2.6.7 supports evaluation and decision making.

CK2.7	**The features of personal and business taxation**
	Students should be able to recall the features of personal and business taxation within the creative industries.
	2.7.1 income tax:
	• amount of tax paid dependent on personal income
	• different tax bands dependent on taxable income:
	  o personal allowance
	  o basic rate
	  o higher rate
	  o additional rate.
	2.7.2 tax year returns:
	• annual period for reporting expenses and income
	• self-assessment
	• tax deductible expenses
	• capital allowance – claiming certain business development expenses against taxation:
	  o premises
	  o equipment
	  o machinery.
	2.7.3 corporation tax:
	• paid on profits from doing business as:
	  o a limited company
	  o any foreign company with a UK branch or office
	  o a club, co-operative or other unincorporated association
	• calculated and paid by filing company tax return.
	2.7.4 National Insurance (NI) contributions – tax on earnings and self-employed profits:
	• supports state benefits:
	  o state pensions
	  o jobseeker's allowance
	  o parental leave
	  o bereavement support payment
	  o guardian's allowance
	  o statutory sick pay.
	2.7.5 value-added tax (VAT) – consumption tax on goods and services:
	• varying categories and levels of VAT rates:
	  o standard rate
	  o reduced rate
	  o zero rate.

CK2.8	**Strategies for developing professional client relationships** Students should be able to: • recall the strategies for developing professional client relationships • demonstrate understanding of the benefits and challenges of different strategies for developing professional client relationships.

	2.8.1 researching the client or organisation:
	• their products and service range
	• their brand
	• their values
	• their USP.
	2.8.2 acquiring market knowledge and intelligence on:
	• competitors
	• comparable product, content or services
	• trends
	• potential areas for growth.
	2.8.3 providing creative and innovative options that meet the brief.
	2.8.4 being solution focused when issues arise by development of multiple approaches to problems.
	2.8.5 encouraging feedback and reacting in an appropriate manner, showing:
	• empathy
	• adaptability
	• focused on problem solving
	• patience
	• feeding forward.
	2.8.6 providing effective customer service:
	• using appropriate communication:
	  ○ technical and non-technical terminology
	  ○ appropriate format
	• responding in an appropriate timeframe
	• showing dependability and reliability.
	2.8.7 delivering the product, content or service:
	• on time
	• within budget
	• meeting requirements of the brief.

Content area 3: Cultural context and vocabulary	
CK3.1	**The influence of external factors on the emergence and evolution of style, tastes and trends within the creative industries** Students should be able to: • recall the external factors that influence the emergence and evolution of style, tastes and trends within the creative industries • demonstrate understanding of why different external factors influence the emergence and evolution of style, tastes and trends within the creative industries • consider how the interrelationship between different external factors influence the emergence and evolution of style, tastes and trends within the creative industries. 3.1.1 economic factors: • disposable income – results in increased spending power of customer • cost of production – impacts on affordability of products.

	3.1.2 environmental factors: • sustainability – impacts on the materials, products and processes available. 3.1.3 social behavioural factors: • equality, diversity and inclusion – contributes to freedom of expression and cultural expression • influencers and endorsement – encourage individuals to buy particular products or services • ethics – preference and choices influenced by social acceptance and ethics • national and global events and celebrations – event-specific merchandise. 3.1.4 political factors: • changes in law and legislation – impacts on the use and control of prohibited materials and international trading • changes in political agendas and campaigns – impacts on variety of materials that can be used. 3.1.5 technological factors: • mass production – more choice and quantity of products • accessibility – products and services being more readily available and accessible • predicted algorithms – directs individuals to predicted choice patterns.
CK3.2	**Common risks and impacts of cultural appropriation within the creative industries** Students should be able to: • recall the risks and impacts of cultural appropriation within the creative industries • demonstrate understanding of the risks and impacts of cultural appropriation within the creative industries • apply knowledge and understanding of the risks and impacts of cultural appropriation within the creative industries to different contexts • consider different aspects of cultural appropriation within the creative industries, including how they interrelate. 3.2.1 risks: • exploitation of non-dominant culture • reinforcing stereotypes • misrepresentation • misappropriation • marginalisation • profiteering • offence • racism. 3.2.2 impacts: • legal repercussions: o lawsuits o defamation • financial: o loss of sponsorship o negative audience reaction

	○ loss of income ○ fines from regulatory bodies • reputational damage.
CK3.3	**The contextual vocabularies used in the principles of storytelling in craft products** Students should be able to: • recall the contextual vocabularies and principles of storytelling • demonstrate understanding of the benefits and challenges of how contextual vocabularies are used in the principles of storytelling • apply knowledge and understanding of the contextual vocabularies used in the principles of storytelling to different contexts • consider different aspects of the contextual vocabularies used in the principles of storytelling, including how they interrelate, and make decisions about the use of the contextual vocabularies used in the principles of storytelling in different contexts. 3.3.1 purposes and principles of storytelling within craft products: • provides a narrative • gives meaning to an item • offers a symbolic interpretation, including cultural or religious garments • evokes a connection • offers a symbolic interpretation through cultural contexts: ○ events and movements ○ moments and celebrations ○ emotions and expressions ○ traditions and beliefs ○ symbols and imagery ○ motifs and shapes • offers inspiration for artefacts: ○ historical objects ○ religious relics ○ artistic expression ○ mementos of occasions ○ heirlooms. 3.3.2 contextual vocabularies: • imagery: ○ narrative – the design tells a story ○ decorative – the surface design and finish ○ informative – the design is literal and factual ○ conceptual – the design concept is the focus rather than the aesthetic • colour: ○ selection of colour scheme to evoke mood and emotion ○ variance of tone to convey a message to fit the narrative ○ selection of hue and value to enhance the environment ○ adjust intensity to match the aesthetic

	• material:
	  ○ complement design concept
	  ○ enhances the aesthetic
	  ○ incorporates texture and pattern
	• shape:
	  ○ consideration of where light might fall on the product
	  ○ use of shadow
	  ○ exaggerated form – used to enhance the narrative or storytelling
	  ○ atmospherics – used to create an environment through tone and mood
	  ○ physical movement of the product or a component part.

Content area 4: Audience	

CK4.1	**Key factors and importance of audience and customer research**
	Students should be able to:
	• recall the key factors and importance of audience and customer research
	• demonstrate understanding of the ways in which audience and customer research can benefit projects in the creative industries
	• consider different aspects of the key factors and importance of audience and customer research and how they interrelate.
	4.1.1 key factors of audience and customer research:
	• identification of target audience:
	  ○ mass market/mainstream – appeals to a wide range of demographics and psychographics
	  ○ minority – underrepresented demographics
	  ○ specialised – niche social groups, groups with specialist or non-mainstream needs
	• identification of audience and customer needs and demand through a range of research methods.
	4.1.2 importance of market and customer research:
	• influences the creative process of development
	• determines the commercial opportunities available
	• determines the commercial viability
	• generates feedback on initial ideas and proposals
	• highlights existing and emerging trends of consumption
	• provides insight into cultural sensitivities, including cultural appropriation, stereotypes, prejudice
	• allows correct identification of specific target market
	• supports efficient spending and budgeting.

CK4.2	**Demographical and geographical considerations to support the diverse needs of audiences and customers** Students should be able to: • recall how demographic and geographic considerations impact the diverse needs and interests of audiences

	• demonstrate understanding of the benefits and drawbacks of using demographic and geographic considerations to support the diverse needs and interests of audiences in the creative industries
	• consider different aspects of demographic and geographic topics and how they impact the diverse needs and interests of audiences and how they interrelate.
	4.2.1 demographics:
	• age
	• gender identity
	• sexual orientation
	• race
	• culture
	• career
	• religion
	• education level
	• family size
	• disposable income
	• interests and leisure time
	• disability and impairment.
	4.2.2 geographics:
	• country
	• climate
	• area
	• location
	• population.
	4.2.3 psychographics:
	• motivations:
	  ○ attitudes
	  ○ lifestyle
	  ○ previous consumer behaviour
	  ○ beliefs
	  ○ values
	• preferences:
	  ○ language
	  ○ device
	  ○ platform.

CK4.3	**Methods that may be used to measure the impact of products, services or content on an audience or customer** Students should be able to: • recall the methods used to measure the impact of products, services or content on an audience or customer • demonstrate understanding of the ways in which the methods used to measure the impact of products, services or content on an audience or customer are important in the creative industries

	• consider different aspects of the methods used to measure the impact of products, services or content on an audience or customer, their importance and how they interrelate. 4.3.1 methods: • achievement of a nomination and/or award – the product, content or service has received a form of recognition • critical response – levels of positive or negative responses to the product, content or service • rating to describe how well a product, content or service meets audience expectations • endorsements – from celebrities, influencers or companies • income – the total income generated from a product, content or service • sales – the quantity of a product, content or service sold • increased demand – from global markets, demand-driven longevity, franchising, licensing. 4.3.2 importance: • used to determine the success of a product, content or service • used to inform future creative developments • used to make improvements to an existing product, content or service • used to make a comparison to similar products • used to attract future endorsements, sponsorships and income generation.

Content area 5: Legislation/regulation	
CK5.1	**Key features of legal and regulatory requirements affecting the creative industries and implications of non-compliance** Students should be able to: • recall the key features of legal and regulatory requirements affecting the creative industries • demonstrate understanding of the benefits and challenges of adhering to legal and regulatory requirements and the implications of non-compliance with legal and regulatory requirements affecting the creative industries. 5.1.1 Health and Safety at Work etc Act. 1974 (including The Work at Height Regulations 2005, The Manual Handling Operations Regulations 1992, The Management of Health and Safety at Work Regulations 1999, The Health and Safety (Display Screen Equipment) Regulations 1992): • key features – employers are required to: o provide adequate training for staff o provide adequate welfare provision for staff at work o provide a safe working environment that is properly maintained o provide effective recording and reporting of health and safety issues o provide suitable provision of relevant information o provide instruction and supervision o consider individual needs o provide a duty of care to protect the health of employees o consider the safety and wellbeing of employees through what is reasonably practicable.

	5.1.2 Copyright, Designs and Patents Act 1988:
	• key features:
	  ○ protects intellectual property rights (IPR)
	  ○ enables control over the ways in which material can be used
	  ○ royalties or other sums may be payable to royalty collection societies for use of certain works
	  ○ sets out requirements for licensing of products, media or content.
	5.1.3 Data Protection Act 2018:
	• key features – governs use of data and information in line with data principles:
	  ○ used fairly, lawfully and transparently
	  ○ used for explicit purposes
	  ○ kept for no longer than required
	  ○ accurate and up to date
	  ○ handled in a secure way.
	5.1.4 Environmental Protection Act 1990:
	• key features:
	  ○ protects and improves environmental quality and reduces pollution
	  ○ supports and promotes the management, protection and enhancement of the environment.
	5.1.5 Safeguarding Vulnerable Groups Act 2006:
	• key features:
	  ○ individuals working with vulnerable groups must undergo a screening process
	  ○ prevents people who are deemed unsuitable to work with children and vulnerable adults.
	5.1.6 The Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Enforcement Regulations 2008 and The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019:
	• key features:
	  ○ control and restrict the use of chemicals in industrial processes and daily life
	  ○ control of nickel, lead and cadmium in items of jewellery that have direct or prolonged contact with the skin
	  ○ restrict the use of lead in paints and glazes for ceramics
	  ○ restrict the use of chemicals used as flame retardants in textiles.
	5.1.7 The Furniture and Furnishings (Fire Safety) Regulations 1988, 1989, 1993 and 2010:
	• key features:
	  ○ ensures upholstery components used in furniture making meet specific criteria for ignition resistance levels.
	5.1.8 implications of non-compliance:
	• prosecution
	• fines
	• injury or danger to life

	• reputational damage • damage to equipment • loss of business • loss of sponsorship or external funding • intervention from regulatory bodies • damage to environment.

Content area 6: Professionalism and ethics	
CK6.1	**The principles of professional codes and standards and how they are applied within the creative industries** Students should be able to: • recall the principles of professional codes and standards • demonstrate understanding of the benefits and challenges of following the principles of professional codes and standards and how they are applied within the creative industries • apply knowledge and understanding of the principles of professional codes and standards and how they are applied within the creative industries to different contexts. 6.1.1 confidentiality: • compliance with policies related to privacy, confidential information and personal information • use of non-disclosure agreements (NDAs) • requirement for informed consent. 6.1.2 data management and protection: • compliance with the data protection principles • compliance with organisational security procedures, including appropriate use, storage and processing of data • use of appropriate access and permissions • appropriate sharing and archiving of assets. 6.1.3 work etiquette: • appropriate dress and personal protective equipment (PPE) • appropriate behaviours • appropriate communication, including when dealing with internal and external stakeholders: o use of technical and non-technical terms, when appropriate o use of appropriate communication methods • appropriate attitude and compliance with risk management • appropriate training requirements to meet job specifications • compliance with health and safety protocols. 6.1.4 ethical practice: • ethical sourcing of resources and materials • protection of vulnerable people • contributors support available pre- and post-production

	• embedding ethical considerations in:
	  o decision making
	  o production operations
	  o meeting corporate social responsibility (CSR).

CK6.2	**Common ethical dilemmas individuals and organisations may face within the industry** Students should be able to: • recall common ethical dilemmas individuals and organisations may face within the creative industries • demonstrate understanding of the ways in which common ethical dilemmas can impact individuals and organisations within the creative industries • apply knowledge and understanding of common ethical dilemmas individuals and organisations may face within the creative industries to different contexts. 6.2.1 compromising on quality of a product, content or service. 6.2.2 misleading information regarding a product, content or service. 6.2.3 inclusion of bias within a product, content or service. 6.2.4 unethical market research. 6.2.5 plagiarism of others works.

Content area 7: Equality, diversity and inclusion	

CK7.1	**The equality and diversity factors to consider when undertaking workplace operations**
	Students should be able to:
	• recall the equality and diversity factors craft practitioners need to consider when undertaking workplace operations
	• demonstrate understanding of the equality and diversity factors and the ways in which factors affecting equality and diversity can impact workplace operations.
	7.1.1 the protected characteristics of individuals defined by discrimination law:
	• age
	• disability
	• gender reassignment
	• marriage and civil partnership
	• pregnancy and maternity
	• race
	• religion or belief
	• sex
	• sexual orientation.
	7.1.2 the potential vulnerability of audience and customer types:
	• under-18s
	• under- and over-18s experiencing:
	  o mental illness
	  o disability

	○ neurodiversity ○ learning impairment. 7.1.3 the presence of unconscious bias – stereotyped judgements made without conscious awareness: • author/proprietary bias – unweighted opinions of the author • confirmation bias – evidence selected to support a predetermined assumption • selection bias – selection based on meeting specific criteria • cultural bias – inherent assumptions based on societal norms.
CK7.2	**Barriers to equality and diversity within the creative industry** Students should be able to: • recall barriers to equality and diversity within the creative industry • demonstrate understanding of barriers to equality and diversity within the creative industry and the ways in which barriers can affect equality and diversity in the creative industries. 7.2.1 lack of diverse representation in leadership. 7.2.2 inappropriate workplace culture: • non-inclusive views and behaviours • non-inclusive practices • lack of organisational policies and frameworks. 7.2.3 stereotypical beliefs. 7.2.4 socioeconomic status. 7.2.5 limited access to education or training. 7.2.6 lack of exposure to diverse environments. 7.2.7 discrimination: • positive • negative.
CK7.3	**The types of reasonable adjustments that may be applied within the creative industry and how they may enhance the accessibility of created content, products or services** Students should be able to: • recall types of reasonable adjustments that may be applied within the creative industry • demonstrate understanding of reasonable adjustments that may be applied within the creative industry and how they may enhance the accessibility of created content, products or services. 7.3.1 reasonable adjustments to support users with auditory impairments, including loss of or impaired hearing: • subtitles for the deaf or hard of hearing (SDH) • closed captions (CC) • signed performances • induction loop systems • headset broadcast.

	7.3.2 reasonable adjustments to support users with visual impairments, including blindness, colour blindness or impaired vision: • audio-descriptions. 7.3.3 reasonable adjustments to support deafblind users, including loss of or impaired hearing and vision: • audio-described closed captions communicated through the use of braille/braille readers. 7.3.4 reasonable adjustments to support users with cognitive, learning, neurological and neurodiverse conditions, including impairment in communication skills, social skills or mental function: • restrictions on content for photosensitive customers, including flashing, blinking, contrasting light, sudden movement. 7.3.5 reasonable adjustments to support users with motor impairments, including limited or no motor function: • infrastructure of the space or venue: o ramps o lifts o viewing platforms o virtual attendance options. 7.3.6 reasonable adjustments to support speech impairments (for example, impeded speech): • digital communication support applications.
CK7.4	**The value of a diverse and inclusive working environment** Students should be able to: • recall the reasons why a diverse and inclusive working environment is important • demonstrate understanding of the benefits of a diverse and inclusive working environment and ways in which these benefits can be achieved. 7.4.1 broader perspective in decision-making process. 7.4.2 diverse ideas and approaches embedded throughout the creative process. 7.4.3 opportunity for connections with underrepresented groups. 7.4.4 increased awareness and organisational culture of diversity and inclusion. 7.4.5 positive reputation for utilising inclusive approaches, including recruitment, promotion, training.

Content area 8: Research skills	
CK8.1	**Common sources of knowledge** Students should be able to: • recall the features of common sources of knowledge • demonstrate understanding of the ways in which common sources of knowledge can be used to support research in the creative industries. 8.1.1 common sources: • academic publications – provide information on previous research, theories, observations, methodologies

	• galleries and exhibitions – curated visual displays and showcases of creative practice • trade fairs – exhibits from a range of organisations within a specific industry demonstrating their product, content or service • libraries – offer a breadth of resources in one place • internet/websites/social media – digitally accessed repositories providing global data and information • museums – display artefacts and other objects of artistic, cultural, historical or scientific importance • manufacturers' websites/guides – provide information from manufacturers to support product, content or service • government documents – disseminate information from national and local government agencies • professional/peer networks – provide opportunities to share best practice • e-learning – online courses to support development.
CK8.2	**The purpose and application of research methods utilised within the creative industries** Students should be able to: • recall the research methods, techniques and the purpose of the research methods utilised within the creative industries • demonstrate understanding of the ways in which the research methods are applied in the creative industries and the benefits and drawbacks of the research methods. 8.2.1 qualitative method – research relating to the collection and analysis of non-numerical information: • used to understand opinions and concepts. 8.2.2 quantitative method – research relating to the collection and analysis of numerical information: • used to find patterns, make predictions and generalise results. 8.2.3 primary method – information collected directly from the source: • field research, including interviews, surveys, observations, questionnaires. 8.2.4 secondary method – research drawing upon pre-existing sources: • desk-based research, including government documents, published academic papers, historical records.
CK8.3	**Key factors to consider when establishing the reliability and validity of sources** Students should be able to: • recall the key factors to consider when establishing the reliability and validity of sources of information • demonstrate understanding of the ways in which the reliability and validity of sources of information can be authenticated. 8.3.1 author expertise – author credentials, affiliation, use of citation, has other publications. 8.3.2 bias – is there a presence of prejudices? 8.3.3 opinion – does it contain preconceived opinions? 8.3.4 fact or evidence based – is it based on true events or experiences and is the source reliable?

	8.3.5 subjectivity – are conclusions or judgements shaped by personal opinions? 8.3.6 context – is the content relevant? 8.3.7 intended audience – the demographic targeted by the source. 8.3.8 date of publication – is the source recent? 8.3.9 corroboration across sources – are key points confirmed across multiple sources? 8.3.10 citations – have citations been used?
CK8.4	**The appropriate use of information and sources when working in the creative industries** Students should be able to: • recall the common regulatory and legal requirements governing the use of information and sources in the creative industries • demonstrate understanding of the ways in which information and sources must be used to comply with common regulatory and legal requirements operating in the creative industries. 8.4.1 information must be used in line with common regulatory and legal requirements, including: • intellectual property (IP) – only using information and sources in the manner you are permitted to • referencing – making it clear where the original information or source is from • copyright – complying with information regarding replication, communication and distribution of others' work • plagiarism: o direct plagiarism – avoidance of the exact copying or uncited use of another's work or content o self-plagiarism – avoiding the reuse of own published and copyrighted work o accidental plagiarism – avoidance of using another's work or content unknowingly.

Content area 9: Project methodology and administration	
CK9.1	**The stages and requirements within a project lifecycle** Students should be able to: • recall the requirements of each stage within the project lifecycle • demonstrate understanding of the benefits and challenges of meeting the requirements at each stage and requirements within the project lifecycle and how meeting and not meeting these requirements can impact a project in the creative industries • consider different aspects of the stages and requirements within the project lifecycle and how they interrelate. 9.1.1 initiation stage: • identification of client needs or brief requirements

	• identification of feasibility of project in relation to:
	  o budget
	  o timeframes
	  o resources
	• identification of risks
	• identification of scope
	• identification of outcome or deliverables, including key performance indicators (KPIs)
	• identification of stakeholders
	• creation of key documentation.
	9.1.2 planning stage:
	• organisation of the project into smaller phases
	• identification of roles and responsibilities of project personnel
	• identification of task dependencies
	• creation of project plan
	• establishment of working procedures of the project
	• financial management, including forecasting, budgeting
	• establishment of resource requirements:
	  o materials
	  o personnel
	• scheduling:
	  o allocation of duties
	  o creation of workflows, including the use of Gantt charts
	  o collaboration with stakeholders
	• contingency planning.
	9.1.3 execution stage:
	• create/produce
	• monitoring of quality outcomes and deliverables.
	9.1.4 delivery stage:
	• completion of identified outcomes
	• supply of identified deliverables.
	• project evaluation and reporting:
	  o reflective practice
	  o determining positive and negative outcomes of project.

CK9.2	**The common features and types of project tools applied to managing projects** Students should be able to: • recall the common features and types of project tools • demonstrate understanding of the benefits and challenges of using project tools and the ways in which project tools are applied when managing projects in the creative industries • consider different aspects of the common features and types of project tools and how they interrelate.

	9.2.1 common features of project tools: • planning – organising and planning the scope, tasks, activities and timelines of a project • time management – enables project teams to log and measure time and effort • estimation and forecasting – allow for estimations of key project drivers • scheduling/tracking – schedule, delegate and track work with tasks, subtasks, folders, workflows and budgets • management of risks – identification and mitigation of risks • collaboration and communication – working with multiple people by assigning tasks, monitoring progress, approving changes and communicating via chat groups • file management – editing, versioning, sharing and storing files • reporting – provides an update on status and progress to stakeholders • evaluation – ability to track and assess productivity and progress through resource management. 9.2.2 types of project tools: • digital project management software – multi-feature software packages for tracking tasks and time • work breakdown structure software – used to detail tasks within a project, the sequence, dependencies and timescales • spreadsheets – store, manipulate and analyse data • dashboards – a way of visually displaying data, such as KPIs • customer relationship management (CRM) software – used to manage and record interactions with stakeholders.
CK9.3	**The roles, responsibilities and interdependencies of key personnel within a project** Students should be able to: • recall the roles, responsibilities and interdependencies of key personnel within a project • demonstrate understanding of the benefits and challenges of key personnel meeting their responsibilities and the ways in which the roles, responsibilities and interdependencies of key personnel can impact a project in the creative industries • consider different aspects of the roles, responsibilities and interdependencies of key personnel within a project and how they interrelate. 9.3.1 commissioning roles: • responsibilities: o sets brief o sets scope o sets budget o requests changes o releases payment o accepts final deliverables

	• interdependencies:
	  ○ provides direction to project leadership
	  ○ oversees direction of creative decisions taken
	  ○ receives updates from leadership team on progress.
	9.3.2 project leadership roles:
	• responsibilities:
	  ○ manages the project from concept to close
	  ○ communicates tasks to the wider production team
	  ○ manages budget
	  ○ manages and plans resources
	  ○ communicates with client or commissioner
	  ○ initiates project evaluation and closure
	• interdependencies:
	  ○ receives direction from commissioner or client
	  ○ provides direction to project production team.
	9.3.3 production roles:
	• responsibilities:
	  ○ provides expertise for specific areas required by the project
	  ○ generates design ideas and concepts
	  ○ performs project tasks
	  ○ provides status updates
	• interdependencies:
	  ○ reliance on sequencing of tasks across departments
	  ○ receives direction from project leadership
	  ○ provides feedback concerning their specialism to appropriate stakeholders.

	9.3.4 distribution roles:
	• responsibilities:
	  ○ promotion and marketing of production content
	  ○ monetising the content through sales
	  ○ compliance with legal processes
	• interdependencies:
	  ○ provides distribution recommendations to commissioner in line with agreed targets
	  ○ liaises with project leadership on distribution model and material, based on creative decisions and directions.

CK9.4	**The key components of a project budget** Students should be able to: • recall the key components of a project budget • demonstrate understanding of the benefits and challenges of maintaining a project budget and the ways in which the components of a project budget can impact projects in the creative industries • consider different aspects of the key components of a project budget and how they interrelate.

	9.4.1 forecast revenue – details the money that the project is expected to make. 9.4.2 fixed costs – details fixed regular expenditure during the project. 9.4.3 variable costs – details the costs for goods, services or materials that may fluctuate during the project. 9.4.4 one-time expenses – details one-off payments for products, goods or services during the project. 9.4.5 cash flow – details movement of money during the project. 9.4.6 profit – details the money remaining after all project deductions.

Content area 10: Continued professional development	
CK10.1	**The benefits of enhancing awareness of evolving developments within the creative industries** Students should be able to: • recall the benefits of enhancing awareness of evolving developments within the creative industries • demonstrate understanding of the benefits and challenges of enhancing awareness of evolving developments within the creative industries through different sources of information. 10.1.1 benefits: • keeping up to date with industry developments • receiving information on new techniques and equipment used in the industry • raising awareness of new terminology used in industry • visual instructions for how to use new technology and techniques • increasing awareness of networking and training opportunities in the industry.
CK10.2	**The application of evolving developments and the wider impact within the creative industries** Students should be able to: • recall the features of evolving developments within the creative industries • demonstrate understanding of the benefits and drawbacks of evolving developments within the creative industries • apply knowledge and understanding of evolving developments and their wider impact within the creative industries to different contexts • consider different aspects of evolving developments, including how they interrelate, and make decisions about the use of evolving developments within the creative industries in different contexts. 10.2.1 evolving developments: • artificial intelligence (AI) and its application within the creative industries: o predictive analytics o fault detection • extended reality – augmented and virtual, and its application within the creative industries: o creating immersive environments, experiences and interactions o virtual production

	• cloud-based technology and its application within the creative industries:
	  o online storage
	  o distribution of content or services
	• automation and its application within the creative industries:
	  o streamlining of processing and production operations
	  o self-service functions
	  o customer communications.
	10.2.2 wider impact within the creative industries:
	• reliable connectivity
	• wider customer accessibility
	• increased customer choices and options (for example, catch-up functions, watching content on mobile phones)
	• drives efficiency and cost savings
	• environmental sustainability.

CK10.3	**The purpose of professional development for an individual within the creative industries** 10.3.1 to maintain industry and sector relevance. 10.3.2 to broaden employment opportunities and work prospects. 10.3.3 to meet professional body accreditation requirements. 10.3.4 to conform to industry standards. 10.3.5 to meet legislative requirements: • safeguarding • copyright/intellectual property (IP) • General Data Protection Regulation (GDPR)/Data Protection Act 2018. 10.3.6 to comply with health and safety requirements.

Scheme of Assessment – Core Component

There are two assessments in the Core component of the *T Level Technical Qualification in Craft and Design*:

- Core Examination Paper
- Employer Set Project.

The mapping, timings, scheduling and preparation for the assessments shown below are for the current specimen assessment material. The actual live assessments will have the same overarching number of tasks and overall focus. However, the order of tasks and the details within the task may change each series.

Core examination

Written Paper:
Written examination: 2.5 hours **60% of the core assessments** **120 marks**
Content overview Content area 1 – The creative economy Content area 2 – The individual in the creative industries Content area 3 – Cultural context and vocabulary Content area 4 – Audience Content area 5 – Legislation/regulation Content area 6 – Professionalism and ethics Content area 7 – Equality, diversity and inclusion Content area 8 – Research skills Content area 9 – Project methodology and administration Content area 10 – Continued professional development
Assessment overview A written examination comprising of three sections A and B and C. Each section will have the same grade targeting profile as other sections. Students answer all questions in each section. The examination will get progressively more challenging as the student progresses through the examination by ramping in demand and difficulty. The Core Examination is set and marked by Pearson. Each section will be assessed through a combination of: • MCQ/short open response items • medium open response items • extended open response questions. The examination is: • set and marked by Pearson • timetabled at a time and on a date specified by Pearson.

Administration

The paper must be assessed under exam conditions, following JCQ's Instructions for Conducting Examinations (ICE).

Core Examination Assessment Objectives

	AO1a	AO1b	AO2	AO3a	AO3b
Section A	6	28	0	6	0
Section B	5	18	8	6	3
Section C	5	16	10	6	3
Total 120 marks	16	62	18	18	6
	13%	52%	15%	15%	5%
	65%		15%	20%	

Employer Set Project

Employer Set Project
Externally assessed project: 19 hours 30 minutes **40% of the core assessments** **132 marks**
Content overview When responding to the project, students will need to draw on naturally occurring synopticity from the core content.
Assessment overview Students will be given an overarching scenario to set the scene and individual tasks stimulus to cover all the skills and AOs. These are: • Task 1: Research report • Task 2: Generating ideas, design board creation, creating and delivery of presentation • Task 3: Final design • Task 4: Group collaboration • Task 5: Reflective evaluation Students undertake the assessed elements of the project tasks under supervised and controlled conditions. The assessment takes place over multiple sessions up to a combined duration of 19.5 hours. The project outcomes consist of a portfolio of evidence submitted electronically. Students undertake a project in response to a realistic contextual challenge. The project is set and marked by Pearson.
Administration Providers must follow the guidance in the following: • General Administrative Support Guide • Administration Support Guide for the specific Technical Qualification Employer Set Project (if applicable). These are located on the Training and Admin Support webpage.

Employer Set Project Assessment Objectives

Assessment Objective	
AO1	Plan their approach to meeting the brief
AO2	Apply core knowledge and skills as appropriate
AO3	Select relevant techniques and resources to meet the brief
AO4	Use English, mathematics and digital as appropriate.
AO5	Realise a project outcome and review how well the outcome meets the brief

The ESP has targeted weightings to AOs as shown in the table below:

AO1	AO2a	AO2b	AO3a	AO3b	AO4a	AO4b	AO4c	AO5a	AO5b	Total
6	42	36	0	12	9	0	0	15	12	132
6	78		12		9			27		132

Resources for the delivery of the Core component content

There is no specialist equipment required for the delivery of the Core component.

4 Occupational Specialisms

1. Ceramics Maker

Performance Outcome 1: Analyse, interpret and respond to a creative proposition or a brief taking on board purpose and end user

What skills do students need to demonstrate?
CRS1.1 Interpret a creative proposition or a brief: • deconstruct the brief • identify constraints (for example, budget, size, deadline) • identify the requirements (for example, purpose, context, target audience) • identify the appropriate route to market • prioritise the requirements (E4, E5, M6)

CRS1.2 Carry out research using primary and secondary sources to inform the development of a creative product/products:
• identify appropriate factors and areas to research (for example, makers using a particular technique)
• select appropriate sources (for example, galleries, shops, online resources)
• select and correctly apply appropriate research methodologies:
  ○ qualitative research
  ○ quantitative research.
• document and record research findings
(D5, E4, E5, M6)

CRS1.3 Research sources for materials: • identify appropriate factors to research and choose reliable sources and suppliers. • consider constraints (for example, availability, cost and lead times) • consider ethical sourcing of materials (for example, origins of oxides and glaze materials) (E4, E5)
CRS1.4 Explore design principles: • experiment with a range of design principles (for example, shape, scale and size, proportion, colour, texture, finish) • document and record findings. (D1, E4, E5)

CRS1.5 Collate research findings using different media:

- organise and record research findings and information logically using appropriate media (for example, mood board, mind map, digital presentation, sketchbook)
- identify appropriate concepts and themes
- summarise findings
- maintain an accurate and ongoing record of sources and references

(D1, E4, E5)

CRS1.6 Generate ideas for concept:

- draw conclusions from research findings and exploration of design principles
- experiment with ideas suggested by research
- explore design principles
- explore 2D and 3D media
- evaluate ideas against requirements of brief and choose which to take forward

(D1, E1, E4, E5)

What underpinning knowledge do students need?	

CRK1.1	**Factors to consider when responding to a design brief:**
	• type of work (for example, one-off, bespoke, limited run)
	• context:
	  ○ statement piece (for example, sculptural form)
	  ○ commission (for example, bespoke item)
	  ○ functional (for example, homeware)
	  ○ decorative (for example, display item)
	  ○ commercial (for example, restaurant, hotel)
	  ○ ceramic engineering (for example, medical implant, electrical insulator)
	  ○ industrial (for example, sanitaryware, bricks)
	• setting:
	  ○ interior or exterior (for example, home or garden)
	  ○ private or public (for example, home or gallery)
	• market:
	  ○ retail (for example, high street shop, gallery shop, online sales)
	  ○ wholesale (for example, trade show, broker, agent, online, business-to-business (B2B)
	  ○ direct sales (for example, craft market, exhibition, studio shop).

CRK1.2	**Factors to consider when interpreting a design brief:**
	• allocated budget
	• function:
	  ○ interior or exterior
	  ○ utilitarian
	  ○ decorative
	• practical considerations:
	  ○ size
	  ○ weight

	○ shape ○ fitness for purpose • ergonomics • scale of production: ○ one-off ○ part of a series ○ batch production ○ limited run ○ mass production.
CRK1.3	**Purpose and principles of ergonomics in ceramics:** • purpose: ○ use and function: how people interact with object • principles: ○ durability ○ practicality (for example, stable, easy to clean effectively, light enough to lift).
CRK1.4	**Factors to consider when selecting materials:** • suitability of material choice for purpose (for example, frost proof for plant pot, dishwasher safe for mug) • suitability of processes and production techniques (for example, slip casting, throwing, jigger and jolly) • finish and surface decoration (for example, slip decoration techniques, printing, embossing) • end function • cost and availability • shrinkage rates of clay.
CRK1.5	**Characteristics of design principles within ceramics:** • line: ○ line type (for example, vertical, horizontal, thick, thin, zigzag) ○ adds pattern or texture ○ adds emphasis (for example, weight of line can create depth, vertical lines can create length) • texture: ○ provides surface quality, appearance and feel of individual components or overall item ○ characteristics (for example, rough or smooth, shiny or matt) ○ impact on functionality of item (for example, rough finish may be hard to clean) • shape and form: ○ 2D defines and establishes contour (for example, pattern, surface design) ○ 3D forms create volume (for example, cylinder, sphere, cube)

	• size:
	  ○ accurate sizing for intended function
	  ○ appropriateness for intended use
	  ○ relative to decorative effect
	  ○ practical for production purposes (kiln size must be sufficient to hold the item)
	  ○ effect of shrinkage rate on size of item post-firing proportion:
	  – relative sizes between component parts (for example, small handle on a large mug)
	  – relationship with surrounding environment or objects
	  – of item in relation to scale/size of surface design
	• colour:
	  ○ contrast
	  ○ hue, value, intensity and tone
	  ○ colour trends and forecasting
	  ○ colour palette
	  ○ aesthetics.

CRK1.6	**Factors to consider when costing a design brief for ceramics:**
	• costing model matches method of production:
	  ○ personal use
	  ○ bespoke
	  ○ batch production
	  ○ limited run
	  ○ mass production
	• studio rent/utilities
	• time to produce, including:
	  ○ design, labour and lead times
	• cost of materials:
	  ○ bulk buying
	  ○ fluctuating prices
	• calculating a proportion of long-term equipment costs (for example, the purchase of a new wheel or kiln)
	• marketing routes (for example, advertising, website, trade fairs, exhibitions)
	• costs of equipment
	• outsourcing for specialist processes (for example, gilding)
	• competition analysis (for example, pricing of similar products)
	• value of practical skills and experience
	• contingency planning.

CRK1.7	**The differences between costing and pricing and the influence of costs on pricing:**
	• costing (expenses incurred to produce the product or piece of work):
	  ○ raw materials (for example, glaze, clay)
	  ○ overheads (for example, rent, utilities)
	  ○ direct costs (for example, packaging, promotion)

	○ maintenance and tooling ○ consumables (for example, cleaning products) ○ time (hourly rate) • pricing (what the customer pays for a product or service): ○ pricing set by costs incurred plus retail markup and value added tax (VAT) • profit is the difference between pricing and costing • influence of costs on pricing: ○ adjusting pricing in response to changes in costs.
CRK1.8	**Research approaches to support the development of the design brief:** • primary research: ○ collection of original source information ○ own observations (for example, drawings, photos), collecting own data, audience research (questionnaires) • secondary research: ○ using observations, facts and data gathered by others • qualitative research – collection, analysis and interpretation of non-numerical information: ○ gains insight into experiences, thoughts and emotions • quantitative research – collection, analysis and interpretation of numerical information: ○ identifies patterns and trends • accurately record research sources: ○ artist/author ○ bibliographic reference (for example, title of publication) ○ source (for example, location or uniform resource locator (URL) ○ date (for example, year of publication) • breadth of research: ○ using a variety of media (written, numerical, visual, audio) ○ materials research ○ comparisons with historical precedents • relevance of research: ○ interpreting data, judging relevance of material.
CRK1.9	**Aspects to research:** • the market, competitors and current trends: ○ ideology of markets, market trends ○ identifies competitors, designers and businesses ○ gains insight into regional variances ○ identifies different retail options for the product ○ improves knowledge of current and new and emerging materials and production techniques ○ understanding of various methods of trend forecasting, including trade fairs, online services

	○ provides inspiration ○ avoids replication of existing ideas • cultural context: ○ provides insight into values and ideology of movements. ○ awareness of possible cultural sensitivities (for example, cultural appropriation, beliefs and values, customs, respect) • historical context: ○ influence of art and design movements (for example, Art Deco, Bauhaus), artists, designers, practitioners and materials, processes and techniques ○ supports understanding of associated design and production processes ○ influence of political ideologies, conflicts, economics, living conditions, access to materials (local/imported), value of rarer materials and how this impacts on design/trends ○ impact of social identity on a design • sustainability and ethical sourcing of materials, processes: ○ increases awareness of the environmental impact of raw materials used and processes applied ○ understanding supply chain and end of life of products ○ identifies ethical sources for materials ○ improves knowledge of current production methods including packaging. ○ efficiency of materials, minimising waste, recycling or reusing materials in the creation of products. ○ understanding of potential cost implications.
CRK1.10	**Research sources:** • museums, exhibitions and galleries: ○ enables first-hand experience of viewing products ○ provides an opportunity to meet curators, professionals and experts • physical stores – high street and independent: ○ enables first-hand experience of viewing products ○ provides opportunities to handle products • online stores: ○ offers wide ranging and variety of examples to identify trends and styles • books, magazines, catalogues and online journals and blogs: ○ easily accessible ○ provides opportunities to study other works ○ identifies trends and styles ○ provides insight into technologies, processes and techniques • digital/online sources: ○ vast range, also covers new and emerging technologies ○ social media enables interaction with makers ○ up to date with trends

	• workshop visits:
	  o provides opportunities to meet designers, practitioners and experts
	  o provides insight into processes and techniques
	• observations and insights gained from experience:
	  o draws information from unexpected sources, previous projects and customer satisfaction feedback
	• commercially available market analysis reports:
	  o breadth of market information
	• surroundings:
	  o design inspiration (for example, colours, textures and pattern).

CRK1.11	**Sustainability:**
	• circular economy model: production and consumption business model to tackle global challenges:
	  o reduce: fire to lower temperatures, raw-glaze then single-fire, pack kiln efficiently to reduce fuel consumption and slow climate change
	  o re-use: find new uses for by-products and leftovers (shavings of slip, old fire bricks from kiln interiors re-used for brick walls), repurpose household objects as tools (credit cards)
	  o recycle: reclaim clay, glaze, use a sediment tank
	• circular design concepts:
	  o approaches to the design and innovation of products to have a low impact on the environment and positive social purpose:
	  – modular
	  – longevity
	  – efficiency of materials
	  – multi-functional
	  – end of life (for example, reduce, re-use, recycle)
	• sourcing of materials:
	  o reduce/avoid materials that damage the environment (for example, lead) or are unsustainably or unethically produced (for example, cobalt in DRC mined by child labourers; tin from Myanmar sold to fund conflicts)
	  o use alternative materials that are more ethically produced and adapt if possible
	  o ethical dilemmas: toxic/unsustainably sourced material may give a better result artistically; ‘green’ products are often more expensive
	• sustainable production and distribution processes:
	  o increase kiln-fire efficiency
	  o source alternative firing technology
	  o use green energy supplies
	  o source locally where possible to reduce transportation and carbon footprint
	  o design ceramic vessels for longevity
	  o modularity – use of individual component parts to enable products to be disassembled for ease of replacing, recycling or repurposing
	  o use recycled and recyclable packaging
	  o reduce carbon footprint.

CRK1.12	**Ways of presenting research:** • drawing (hand or digital) • 3D CAD (computer-aided design) representation • mind map, spidergram, word cloud (or other graphic representations) • sketch book • digital presentations • mood boards • physical samples and test pieces (for example, samples of glazes, surface finishes) • maquette, prototype, scale model (in any medium).

Performance Outcome 2: Refine and communicate ideas for creative product development

What skills do students need to demonstrate?

CRS2.1 Develop initial ideas for further development and assess suitability for the required function:
• develop initial ideas and assess against the brief considering:
  ○ processes and techniques
  ○ materials
  ○ ergonomics
  ○ production timescales
  ○ clients' requirements
• record and document the review and decision-making process
(D2, D5, E4, E5)

CRS2.2 Present ideas informally for studio critique:
• prepare selected ideas for presentation
• select appropriate format for presentation:
  ○ sketches
  ○ digital presentation
  ○ mood board
  ○ maquettes/prototypes made from paper/card/clay etc.
  ○ examples of clay/decoration/glaze
• invite feedback from audience
• record and document feedback
(D1, D2, D3, E1, E2, E3, E4, E6)

CRS2.3 Take account of informal feedback from presentation and respond appropriately: • analyse feedback • identify and implement improvements • compare ideas to the design brief to ensure suitability for purpose • document each stage of the process (D2, E4, E5)

CRS2.4 Formally pitch idea to clients:

- prepare material for presentation
- select appropriate presentation format (for example, presentation software plus samples)
- use industry-standard terminology
- identify estimated costs and approximate production schedule
- present or pitch to client:
  - explain decision-making process and justify selection of choices.
  - invite feedback
- record and document feedback
- adjust design accordingly

(D1, D2, D3, E1, E2, E3, E4, E6, M9)

CRS2.5 Assess suitability of refined ideas:

- create production plan considering cost of production, time required, health and safety measures

(D1, D3, E2, E3, M9)

What underpinning knowledge do students need?	

CRK2.1	**Ways to communicate ideas:**
	• presentation type:
	  ○ formal:
	  – present idea to a client
	  ○ informal:
	  – peer evaluation for critique
	• visual (for example, physical or digital drawing, mind map, mood board)
	• physical (for example, maquette, sample)
	• written (for example, annotation, log/journal, email, correspondence letter, invoice, note taking, use of technical language)
	• spoken (for example, peer evaluation for critique, presentation to peers or to camera, telephone conversation)
	• digital presentation tools (for example, Microsoft (MS) PowerPoint, Google Slides, Keynote).

CRK2.2	**Use industry-standard language and symbols to communicate design and requirements:**
	• use industry terminology:
	  ○ processes, tools and equipment (for example, slip casting, batts, jigger and jolly, props)
	  ○ kiln-firing terminology (for example, biscuit) including low and high firings
	  ○ clay body terminology (for example, earthenware, stoneware, porcelain)
	  ○ glaze terminology (for example, gloss, matt)
	• allow for regional differences (dottle or dibbler, turning or trimming)

	• use industry symbols:
	  ○ health and safety symbols for hazardous materials (for example, COSHH, RIDDOR)
	  ○ temperatures – Celsius (°C) and Fahrenheit (°F)
	  ○ pyrometric cone reference
	  ○ metric (for example, kilogram (kg))
	  ○ imperial (for example, pounds (lb))
	  ○ chemical formulae (for example, silicon dioxide (SiO2))
	  ○ percentage (%).

CRK2.3	**Awareness of the potential capabilities and limitations of existing and emerging technologies:**
	• computer-aided design (CAD):
	  ○ pros:
	  – can be edited and animated
	  – can calculate (for example, performance metrics, stress points)
	  – is easy to share, long-term costs are low
	  ○ cons:
	  – requires large set-up costs
	  – requires training to operate
	  – costly maintenance and updates
	• 3D ceramic printers:
	  ○ pros:
	  – can create an object to precise and accurate measurements
	  – can be used to replicate (reverse engineer) a pre-existing object
	  – can measure quickly and cheaply
	  ○ cons:
	  – quality of object is low
	  – requires costly software updates
	  – cost versus quality of output
	• augmented reality (AR) and virtual reality (VR):
	  ○ pros:
	  – enables client to view objects virtually in their own setting
	  – is easy to share
	  ○ cons:
	  – not possible to physically touch items
	  – price and availability of equipment
	• computer numerical control (CNC) (for example, miller, router or lathe):
	  ○ pros:
	  – enables precision cutting
	  – automation reduces risk of human error
	  – increases output
	  – reduces workforce cost

	○ cons: – cannot problem solve – requires specialist training to set up and maintain – automation leads to redundancy and unemployment • computer-aided manufacturing (CAM) (for example, laser cutting or 3D printing): ○ pros: – enables precision cutting – reduces waste materials ○ cons: – requires a lot of power to run – shows making marks • smart materials (for example, ceramic-reinforced polymeric composite material): ○ pros: – enhances the experience for the end user – increases the durability of materials ○ cons: – limited access to expertise – environmental impacts of the materials are unknown.
CRK2.4	**Consideration of different making techniques:** • hand building techniques: ○ pinching ○ coiling ○ slabbing ○ sculpting ○ pulling • wheel techniques: ○ throwing ○ turning • techniques using moulds: ○ press moulding ○ hump moulding ○ slipcasting • techniques using specialist mechanical/electric tools or equipment: ○ using jigger and jolly ○ lathe ○ 3D clay printer • industrial techniques: ○ ram pressing ○ high pressure casting.

CRK2.5	**Production costs:**
	Costs of:
	• raw materials (for example, clay, glaze)
	• firing (considering temperature, duration, frequency, number of items)
	• labour (time spent working)
	• overheads:
	  ○ rent
	  ○ utilities (for example, power consumption)
	  ○ salary
	  ○ insurance/tax
	  ○ business rates
	• maintenance/servicing of specialist equipment (kilns, extraction)
	• packaging and distribution
	• marketing
	• contingencies:
	  ○ testing or experimenting
	  ○ seconds or complete failures
	• outsourcing
	• how the scale or production affects costs (for example, one-off, batch, mass production).

CRK2.6	**Routes to market:**
	Understand where products fit in the market before targeting where to sell or market work:
	• exhibition (market stall, gallery, craft fair):
	  ○ pros:
	  – exhibitions raise profile
	  – smaller galleries can be inexpensive/free to exhibit
	  – direct engagement with customers
	  – networking may lead to receiving commissions
	  – connecting to larger outlets
	  ○ cons:
	  – may be expensive to exhibit (for example, price of market stall or fees for use of gallery space, commission costs)
	  – costs to transport work
	  – costs to package work
	• retail:
	  ○ pros:
	  – high visibility for product
	  – reaches a wide audience
	  – boosts brand recognition

	○ cons: – small profit margin (for example, factoring in wholesale price/retailer fees) – potential quick turnover of sales impacting on tight production deadlines – fluctuating sales – product may be withdrawn from stock by vendor – subject to market trends • direct to customer (for example, from own physical shop or website): ○ pros: – no commission costs – control (for example, over branding, presentation, price, etc.) – personal interaction with customers – may reach a wide audience – boosts brand recognition – may build up high footfall ○ cons: – overhead costs – cheaper locations often have low footfall – footfall may be exhaustible – need to identify and target own customers – need to publicise own website or pay for access to online selling services • wholesale: ○ pros: – can sell large quantities – risk of making sales is absorbed by wholesaler ○ cons: – no relationship with customers – less profit per item – potential quick turnover of sales impacting on tight production deadlines.

Performance Outcome 3: Select and test materials, processes, tools and techniques to determine suitability for purpose

What skills do students need to demonstrate?

CRS3.1 Research and explore different tools, equipment and production techniques in terms of appropriateness to achieve the objectives of the brief:
• research and explore a range of:
  ○ tools
  ○ equipment
  ○ production techniques
• document and record:
  ○ research and exploration outcomes

CRS3.2 Safely experiment with different materials and production techniques to test their potential and limitations:
• sample a range of materials and 'push' them (for example, test plasticity, strength etc.) and note results
• explore and test a range of making techniques (for example, hand-building, throwing) and record results
• evaluate how much practice it may take to achieve a suitable standard of expertise
• handle tools, materials and equipment safely; use Personal Protection Equipment (PPE) where needed
• accurately document and record:
  ○ materials, tools and techniques used
  ○ results from testing techniques including potential and limitations of choices
(E4, E5, M1, M2)

CRS3.3 Experiment with different decoration techniques:
• explore a wide range of decorative techniques, including:
  ○ incising/piercing
  ○ stamping, rouletting, milling
  ○ sprigging, embossing
  ○ colouring clay (for example, agate, marbling, neriage, nerikomi)
  ○ slip decoration (for example, painting, sponging, trailing, jewelling, sgraffito, resist techniques, inlay, marbling, feathering)
  ○ printing (for example, monoprint, screenprint)
  ○ masking techniques (for example, paper, wax, latex, shellac)
  ○ ceramic transfer paper/lithographs
• handle tools, materials and equipment safely
• use appropriate Personal Protection Equipment (PPE) where needed
• accurately document and record:
  ○ materials, tools and techniques used
  ○ results from testing techniques including potential and limitations of choices
(E4, E5, M1, M2)

CRS3.4 Experiment with glazing types and techniques:

- explore a wide range of glazing types:
  - glaze properties
  - application of oxides, underglazes
- handle tools, materials and equipment safely
- use appropriate Personal Protection Equipment (PPE) where needed
- accurately document and record:
  - materials, tools and techniques used
  - results from testing techniques including potential and limitations of choices

(E4, E5, M1, M2)

CRS3.5 Use outcomes of testing to make decisions on materials and techniques:

- review testing outcomes meticulously:
  - materials and production techniques
  - decorative techniques
  - glazing types and techniques
- draw conclusions, plan changes based on test results (if there are any) and justify them
- compare conclusions to the design brief to ensure suitability
- select final design and justify decision making
- record the process

(E4, E5, M10)

CRS3.6 Create presentations of concepts for product using appropriate design tools:

- design drawings (hand or digital)
- prototypes, maquettes, test pieces

(D1, D2, D3, E1, E2, M1, M2, M3)

CRS3.7 Create and maintain accurate records of testing of materials and techniques:

- measurements, weights
- time taken to produce test piece

(D1, D2, D3, D4, E1, E2, E3, E5, M1, M2, M3, M5, M8)

What underpinning knowledge do students need?	

CRK3.1	**Suitability of design for intended purpose:**
	• size and volume
	• function and intended use (for example, vessel to hold liquid)
	• materials (for example, appropriate clay and glaze)
	• dimensions including volume:
	  ○ meets requirements of the brief
	  ○ fits the kiln
	  ○ considers clay shrinkage
	• cost
	• stability:
	  ○ does the piece stand steadily when in use?

	• setting/installation considerations:
	  ○ will the piece need to be built in separate components due to weight and practicality of moving?
	• ergonomics and anthropometric aspects:
	  ○ handheld pieces should be comfortable to hold and proportionate to the user (for example, can teapot hold and pour hot liquid safely and efficiently?)
	• aesthetics (if a decorative piece).

CRK3.2	**Calculations to inform size/scale/width/length/volume:**
	• purpose/function of the ceramic object:
	  ○ the dimensions/measurements required
	• calculation types:
	  ○ calculations to inform size
	  ○ volume to size ratios
	  ○ scaling
	  ○ wet clay to fired clay ratios
	  ○ shrinkage
	  ○ weight
	• equipment used to measure and calculate:
	  ○ callipers
	  ○ weights
	  ○ scales.

CRK3.3	**Form and function factors to consider:**
	• size and shrinkage:
	  ○ wet to dry shrinkage ratios:
	  – slip
	  – plastic clay
	  – leather-hard
	  – dry-pressed
	• proportionality:
	  ○ balance
	  ○ scale
	  ○ weight of finished product
	  ○ proportion/golden mean (for example, design components, such as handle, spout)
	• ergonomics:
	  ○ functional ceramics need to be comfortable and proportionate to the user and intended use (for example, handle design on a teapot)
	• aesthetics:
	  ○ the way a product looks and feels (for example, use of balance, colour, pattern, scale and visual weight).

CRK3.4	**Different characteristics and states of clay for industrial or studio craft-based production such as:**
	• slip:
	  ○ liquid consistency
	  ○ used for joining and decorative purposes
	• slurry:
	  ○ mixture of denser solids suspended in liquid, usually water
	  ○ used for joining leather-hard clay body pieces together (slipcasting) and decorative purposes
	• soft leather-hard clay:
	  ○ medium moisture content
	  ○ drier than slip
	  ○ mouldable
	• hard leather-hard clay – holds its form:
	  ○ low moisture content, drier than soft leather-hard
	• greenware or bone dry – clay left to dry for a period of time:
	  ○ least amount of water before firing
	  ○ fragile
	• biscuit/bisque ware – first firing of clay in kiln:
	  ○ no longer clay, it becomes ceramic
	  ○ fragile and porous
	  ○ ready for glazing
	• glaze-fired – firing of clay after application of glaze:
	  ○ finished ceramic
	  ○ vitrification.

CRK3.5	**Types of clay, their physical properties including colour, uses, firing temperature and the results they yield:**
	• terracotta (brown, orange, red) and white earthenware (grey, buff, white):
	  ○ remains porous after firing unless glazed
	  ○ less durable than higher-fired clays, chips easily
	  ○ low firing temperatures (950°C to 1150°C), thus easy to overfire
	  ○ low shrinkage
	  ○ applications: bricks, plant pots, tiles
	• stoneware (grey, buff, brown, white):
	  ○ waterproof after firing
	  ○ hard and durable
	  ○ non-porous
	  ○ high firing temperatures (1150°C to 1300°C)
	  ○ high shrinkage
	  ○ applications: tableware, outdoor use

	• porcelain and bone china (off-white, white):
	  o waterproof after firing
	  o very hard and durable
	  o post-firing is translucent if thin
	  o very high firing temperatures (1200°C to 1400°C)
	  o very high shrinkage
	  o warps and cracks easily
	  o expensive raw material
	  o applications: fine tableware, fine art, decorative objects
	• specialist clays such as:
	  o fireclay:
	  – very refractory
	  – high firing
	  o paper clay:
	  – paper fibre adds strength
	  – makes work lighter and less likely to crack
	  – work can be repaired even after drying out
	  o magnesium clay:
	  – thermal conductor and electrical insulator for industrial applications.

CRK3.6	**Where different raw materials are sourced from:**
	• origins of clay:
	  o weathering of feldspathic rock, minerals and plants
	• raw materials:
	  o clays are dug up, processed (for consistency) and sold wet by weight (typically 12.5kg bag)
	  o some clays are sold in powder form (particularly those used in glaze recipes)
	  o minerals and metal oxides are mined and processed then sold dry by weight in powdered form (for example, copper, cobalt, iron)
	• commercially prepared materials:
	  o stains and underglaze colours are manufactured materials, sold either as dry powder or liquid (mixed with a binder)
	  o frits:
	  – mixtures of minerals that have been melted together, quenched and powdered to overcome solubility in low-firing glazes (for example, high alkaline frit, lead bisilicate, borax frit)
	  o ready-made glazes (powder or liquid)
	  o lustres and enamels.

CRK3.7	**How to prepare clay for use:**
	• clay preparation techniques:
	  ○ by hand:
	  – wedging
	  – kneading
	  ○ mechanically:
	  – pugging
	  – filter pressing
	  ○ slip:
	  – casting slip may be produced by breaking down clay (often reclaim) with a blunger, adding deflocculant and sieving the mix through a fine mesh
	  – decorating slip may be produced by mixing powdered clays with water (and sometimes stain) and sieving through a fine mesh
	• importance of preparing clay before use:
	  ○ creates a smooth, even and homogenous mix
	  ○ removes residual moisture from the clay body to reduce shrinkage
	  ○ removes air bubbles to prevent explosion in the kiln.

CRK3.8	**Different making/production techniques:**
	• making techniques:
	  ○ throwing
	  ○ slab work
	  ○ pinching
	  ○ coiling
	  ○ sculpting
	  ○ press moulding
	  ○ slip casting
	  ○ jigger and jollying
	  ○ ram pressing
	  ○ high pressure casting
	• ways that decoration can be applied:
	  ○ sprig work
	  ○ piercing and carving
	  ○ colouring the clay (for example, agate, nerikomi/neriage)
	  ○ slip decoration (for example, sgraffito, inlay, feathering, marbling, stencilling)
	  ○ sponging, brushwork
	  ○ masking/resist (for example, wax resist, liquid latex, shellac)
	  ○ stamping/embossing
	  ○ printing techniques (for example, mono/screenprint)
	• post-firing decorative techniques:
	• transfers/decals/lithographs – imagery or patterns printed onto ceramic transfer paper and applied to ceramic ware.

CRK3.9	**Preparation of materials:**
	• preparing specialist clay bodies:
	  ○ kneading together different clays
	  ○ kneading in coloured stains, grogs
	  ○ mixing up slips or glazes
	• preparing clay forms for a particular use:
	  ○ rolling or extruding coils
	  ○ rolling out slabs
	  ○ using spray gun/heat gun/hot box to bring clay to desired consistency
	• preparing non-ceramic materials:
	  ○ drawing out and cutting templates from paper/card
	  ○ gathering/making formers/moulds.

CRK3.10	**Knowledge of kilns and firings including:**
	• main types of firing: biscuit, glaze, lustre/decal.
	• kiln and firing types, by fuel source:
	  ○ gas:
	  – connected to a bottle or to the mains supply
	  – ability to fire to very high temperatures
	  ○ wood:
	  – site-specific, exterior firings
	  – produces varied and uncertain results due to ash deposits settling on ceramics
	  ○ electric:
	  – radiates heat in an oxidised environment
	  – controlled heat
	  ○ coal:
	  – historic use as a fuel source
	• kiln and firing types:
	  ○ electric for hobbyists/small businesses:
	  – intermittent use
	  – fired up when required
	  – programmable top or front loader
	  – emptied when cool
	  ○ electric in commercial manufacturing:
	  – continuous/always on
	  – never cool
	  – items on a slow-moving platform through the kiln
	  ○ electric test kiln (small):
	  – small kilns designed to test fire clays and glazes before production firing takes place
	• specialist kiln and firing techniques:
	  ○ raku (crackle, metallic effects)
	  ○ anagama/noborigama (wood ash smudges)
	  ○ smoke (blackened areas)

	○ salt (reacts with clay to produce a glaze with an orange peel texture) ○ soda (flashes of colour) • kiln designs, including: ○ top-loading ○ front-loading ○ catenary arch ○ bottle kiln ○ top-hat ○ tunnel/cart ○ partitioned chamber (anagama) ○ moving wares kiln • differences between oxidation/reduction firing methods: ○ oxidation firing (typically electric) produces even, rich colouring ○ reduction firing (typically fuel-burning kilns such as gas, coal, wood) sucks oxygen from glaze and clay, producing different colours and often speckled effects • different temperatures and the effect that temperature has on the firing process and on different clay bodies: ○ low firing (approx. 980°C to 1080°C, Orton cone 06 to 04): – for earthenware, Egyptian paste, raku – effect of firing: little or no vitrification, fragile, broad range of colours ○ mid firing (approx. 1180°C to 1250°C, Orton cone 9 to 6): – for high-firing earthenware, stoneware, some porcelains – effect of firing: sintering, vitrification, durable, broad range of colours ○ high firing (approx. 1220°C to 1350°C, Orton cone 10+): – for stoneware, porcelain, bone china ○ effect of firing: sintering, vitrification, fusion of ceramic body with glaze layer, very durable, broad range of colours depending on oxidisation or reduction firing.
CRK3.11	**The stages of firing from clay to ceramic:** • biscuit firing: ○ 200°C sintering – steam is emitted ○ 226°C cristobalite inversion ○ 573°C quartz inversion – silica particles undergo a volume change ○ 1000°C to 1060°C low biscuit firing – higher porosity for glaze absorption ○ 1080°C to 1120°C high biscuit firing – clay body reaches point of vitrification (is usually followed by a low temperature glaze firing) • glaze firing: ○ 1040°C to 1160°C – earthenware glazes ○ 1180°C to 1220°C – mid-temperature glazes ○ 1240°C+ – stoneware glazes • lustre/decal firing: ○ 480°C to 900°C lustre/decal.

CRK3.12	**Knowledge of glazing including:**
	• different glazes, pigments and underglazes
	• types of glaze:
	  ○ made to a recipe
	  ○ commercially prepared (for example, powered or brush-on)
	• methods of glaze application:
	  ○ dipping
	  ○ pouring
	  ○ spraying
	  ○ sponging, flicking
	  ○ awareness of contamination when handling glazes and oxides
	  ○ specific glaze techniques are not appropriate for all ceramic forms (for example, brushing glaze onto a large surface area increases chance of uneven coverage)
	  ○ some glazes are not appropriate for specific functions (for example, some lead glazes are not food safe so can't be used for tableware)
	  ○ consistency of glaze
	• fundamental properties of a glaze:
	  ○ impervious to water
	  ○ durable
	• eutectics
	• the most common oxides (cobalt, copper, manganese, iron, rutile)
	• underglazes (powered or liquid)
	• importance of testing glazes:
	  ○ allows for the trial, error and experimentation of glaze results, temperature and materials
	  ○ ensures the glaze is suitable for the intended outcome
	• glaze testing methods:
	  ○ individual glaze following a recipe
	  ○ simple line blend
	  ○ biaxial blend
	  ○ triaxial blend
	• glaze 'recipes' and how they are calculated:
	  ○ silicon dioxide (SiO_2)
	  ○ flux
	  ○ alumina
	  ○ modifiers
	  ○ colourants.

CRK3.13	**Equipment and tools within a ceramic workspace and what they do, such as:**
	• wheel:
	  ○ types – electric or momentum
	  ○ purpose – forms and shapes clay using throwing and trimming/turning techniques

	• wire clay cutter:
	  ○ types – wire made of nylon or steel, with wooden, rubber or plastic handles
	  ○ purpose – slices chunks of clay from larger blocks and cuts pots from the wheel
	• sponges:
	  ○ types – can be natural or synthetic
	  ○ purpose – cleans, smooths and finishes clay work
	• kidneys:
	  ○ types – metal or rubber, smooth or serrated, available in a variety of stiffnesses
	  ○ purpose – used to shape and smooth clay surfaces, apply transfers and press clay into press moulds
	• modelling tools:
	  ○ purpose – sculpts, shapes and refines clay
	• brushes:
	  ○ purpose – applies decorative techniques including glazes, washes and slips
	• loop and ribbon tools:
	  ○ types – wooden with a shaped metal tip, can be double-ended
	  ○ purpose – trims, etches, shapes and refines the clay body, allows for precision cuts, can hollow out sculpted forms
	• batts:
	  ○ types – flat disc attached to the pottery wheel head with clay or bespoke fitting; sheets of plaster for mould making or recycling clay
	  ○ purpose – removal of thrown object from the pottery wheel
	• callipers:
	  ○ types – wooden, metal or plastic
	  ○ purpose – defining measurements, comparing technical drawings against a model to ensure consistency and accuracy
	• glazing tongs:
	  ○ types – typically metal with gripping points on the tip
	  ○ purpose – dip ceramics into glaze
	• pugmill:
	  ○ types – an electrical piece of machinery that churns clay
	  ○ purpose – mixes clay into a plastic state, reclaims clay
	• blunger:
	  ○ purpose – mixes and agitates raw clay into casting slip, decants casting slip
	• extruder:
	  ○ types – electrically operated, wall-mounted or handheld
	  ○ purpose – compresses clay through a template or die to form continuous lengths of clay, can make hollow tubes or solid pieces.

CRK3.14	**How to operate a kiln:**
	• basic maintenance prior to firing within own levels of competence/responsibility
	• how to load/unload a kiln as efficiently as possible:
	  ○ prior to firing:
	  – vacuum the kiln to ensure it is free from debris
	  – apply batt wash to the kiln shelves to protect from damage caused by glaze
	  – place props under hearth shelf
	  – place higher props in correct positions in vertical alignment
	  – pack a full load
	  – pack densely but ensuring a circulation of air
	  – keep pieces away from heating elements
	  – use pyrometric cones
	  – pieces for biscuit may touch each other while pieces for glaze firing must not
	  ○ after firing:
	  – wait until kiln is cool before unloading
	• how to program and run a kiln, including knowledge of delay, ramps, soaks, cooling rates
	• ensuring good ventilation – kiln hood with high temperature extractor fan and air intake pipe.

CRK3.15	**Maintenance of hand tools and equipment:** • clean tools • keep metal tools clean and oiled to prevent rusting • store wires where they will not become entangled with each other • regularly sharpen turning tools, knives • keep momentum tools (kick wheel) greased to ensure smooth movement • clean extruders and slab rollers immediately after use • avoid placing wet rolling pins on flat surfaces where they may warp • clean wooden boards and store vertically to prevent warping.

CRK3.16	**Maintenance of powered tools, plant and equipment and limits of responsibility, when to escalate:**
	• regular maintenance/servicing of machinery and portable appliance testing (PAT)
	• follow manufacturers' instructions
	• limits of responsibility:
	  ○ ensuring equipment is used safely
	  ○ taking part in necessary training on equipment to be used
	• when to escalate:
	  ○ report faulty machinery or equipment to an approved technician or manufacturer.

CRK3.17	**The different roles within the making process including the need for outsourcing:**
	• studio-based roles (designer/maker)
	• manufacturing roles:
	  ○ slip caster
	  ○ mould maker
	  ○ model maker
	  ○ designer
	  ○ decorator (for example, painting, applying handles, applying decals, lustres or gilding)
	• possible outsourced roles:
	  ○ insufficient specialist skill (for example, gilding, lithography)
	  ○ no access to specialist equipment (for example, CAD, ceramic printer, decal)
	  ○ too expensive to produce in-house
	  ○ size of order too big or small to suit studio (for example, mass produced item)
	  ○ licensed design.

CRK3.18	**The importance of reducing waste and the methods to mitigate and reuse waste, where options to reduce have been exhausted**
	• the importance of reducing waste:
	  ○ minimises/reduces the need for mining/quarrying
	  ○ reduces pollution
	  ○ reduces landfill
	  ○ may lower operating costs
	• methods of minimising/mitigating extent of damage:
	  ○ use 'green' energy suppliers (for example, power generated from renewable/sustainable sources)
	  ○ reuse/recycle unfired and fired clay whenever possible (for example, sell seconds)
	  ○ avoid using toxic chemicals (for example, cadmium) or use them in a safer form (for example, lead that is fritted)
	  ○ be selective about which clay items are fired.

Performance Outcome 4: Use selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the brief

What skills do students need to demonstrate?

CRS4.1 Create a production schedule:
• determine activities, such as:
  ○ design phase
  ○ making/decorating phase
  ○ glazing phase.
• create a timeline for all activities allowing time for drying and firings
• calculate and provide accurate costings
• assess risks and appropriate mitigations
• identify possible contingency plans
(E3, E4, E5, M2, M7, M9, M8)

CRS4.2 Prepare a workspace: perform appropriate actions to ensure work area is clean and tidy in accordance with safe working processes and procedures and professional practice

CRS4.3 Select and utilise materials, tools and equipment to achieve the desired outcome:
• select resources required:
  ○ tools
  ○ equipment
  ○ materials
• ensure all tools and equipment are clean and ready for use
(M1, M2, M3, M4)

CRS4.4 Apply selected processes and techniques to realise ideas by making and finishing the item(s) deploying the most efficient ways to fulfil the brief. (M1, M2, M3, M4)
CRS4.5 Apply decoration using appropriate tools. (M1, M2, M3, M4)
CRS4.6 Apply appropriate finish to objects. (M1, M2, M3, M4)
CRS4.7 Handle tools and materials safely in accordance with health and safety legislation.
CRS4.8 Plan effective loading of the kiln considering efficiency and cost: • ensure work is stable (for example, ensure work will not slump or collapse onto other pieces in the kiln) • consider characteristics of individual pieces to determine the optimal position within the kiln • ensure base(s) of work are fully wiped clean of glaze • comply with standard workplace health and safety processes and procedures

CRS4.9 Use materials mindfully and efficiently to minimise waste.

CRS4.10 Detect flaws/faults in materials and respond appropriately:
• detect and remedy where possible and log for future reference if it is too late to correct (post firing), for example:
  ○ air bubbles in clay or bloating of clay (knead/wedge clay more thoroughly)
  ○ 'S' cracks in bases of thrown ware (compress base and dry more slowly)
  ○ seams opening up in slabbed work (strengthen joins with an internal coil)
(M1, M2, M3)

CRS4.11 Store and dispose of materials safely and ecologically: • store hazardous materials in a locked cupboard and ensure hazardous waste materials are disposed of following workshop health and safety policies and in compliance with environmental legislation • reuse and repurpose scrap materials • store usable excess material appropriately and safely • dispose of waste materials safely, according to manufacturers' instructions or workshop policies and procedures

What underpinning knowledge do students need?	

CRK4.1	**Relevant health and safety legislation and environmental management and risk assessment:**
	• Control of Substances Hazardous to Health Regulations 2002 (COSHH):
	  ○ disposing of unused toxic glazes safely
	  ○ wearing appropriate Personal Protection Equipment (PPE)
	  ○ intensive regular cleaning schedules of wet washing to prevent dust inhalation
	• Provision and Use of Work Equipment Regulations 1998 (PUWER):
	  ○ ensuring tools and equipment are maintained appropriately
	  ○ handling equipment and machinery only if trained to do so
	  ○ firing kiln only under full supervision of a trained individual
	  ○ carry out portable appliance testing (PAT)
	• Health And Safety at Work etc. Act 1974 (HASAWA):
	  ○ protection from gases during firing (for example, use of gas extraction units)
	  ○ public safety
	  ○ risk assessments used for processes, chemicals and equipment (for example, use of chemical datasheets made available from manufacturers to enable accurate risk assessment)
	  ○ dedicated kiln room to keep fumes contained
	  ○ not storing combustible materials in the kiln room
	  ○ trained individual always present
	  ○ manufacturers' instructions for machinery made available
	  ○ correct fire extinguishers available, dependent on kiln type

	• Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR):
	  o accident/logbook
	  o toolbox talks
	• manual handling:
	  o ensuring compliance with regulations
	• risk assessment:
	  o chemical datasheets made available from manufacturers to enable accurate risk assessment.

CRK4.2	**Applying standard workplace systems, processes and procedures used to ensure compliance with health and safety and other relevant legislation:** • ensuring qualified first aiders are in place • conducting regular fire drills • conducting risk assessments • ensuring machinery safety training and guidance is in place • applying internal policies and procedures (for example, lone worker; drug and alcohol policy; absence policy; disciplinary and grievance) • wear appropriate clothing (for example, avoid loose hair and dangly jewellery) and, if appropriate, Personal Protection Equipment (PPE) • following standard operating procedure (SOP) • completing regular cleaning schedules: o wet-wiping all surfaces at the end of a task/day, for example mopping the floor.

CRK4.3	**How to read working drawings and specifications including industry-standard descriptions and symbols used to describe processes and finishes:**
	• working drawings:
	  o flat sketch, linear, profile, cross-section view
	  o industry-standard terminology and symbols (for example, construction details, making techniques, material types, finishes)
	• specifications:
	  o purpose of item
	  o dimensions
	  o material requirements
	  o construction methods
	  o decoration
	  o surface finish
	  o industry terminology and symbols (for example, metric weights, temperatures in Celsius, chemical formulae, Orton cone numbers)
	  o production schedules and phases (for example, design; production; post-production).

CRK4.4	**How to measure, interpret size and scale accurately, acceptable tolerances and the ability to produce within defined parameter:** • ensuring product fits within defined parameters • scaling drawings up or down • weighing clay accurately • understanding when to measure dimensions of clay • calculating expected shrinkage and calculating dimensions accordingly • working within acceptable tolerances (for example, +/− 5mm or 5%) • using callipers to measure (for example the fit of a lid on a vessel) • recording slip casting timings • understanding glaze recipes (parts per recipe, percentages of ingredients).

CRK4.5	**Storage of work at different stages:**
	• damp storage of work in progress (to prevent drying out, cracking, warping):
	  o wrap in polythene
	  o place in damp cupboard
	• store work before firing for drying out evenly:
	  o draught-free environment to prevent uneven drying
	  o protect thin or fragile parts with a small sheet of plastic
	• store work between firings:
	  o cover to keep it dust free
	• store finished work:
	  o wrap and place in boxes or in safe appropriate locations.

CRK4.6	**Principles of reclaim/waste management/efficiency of all resources including clay:**
	• recyclable clay:
	  o break down dry and partially dry clay into small pieces
	  o cover with (ideally hot) water and leave to slake
	  o siphon off excess water
	  o squeeze out any remaining water by hand
	  o place clay on a plaster batt to absorb any excess moisture and leave until it achieves a malleable state
	  o wedge/knead or plug clay to a workable plastic state
	• unrecyclable clay (for example, contaminated or unrecyclable clay, broken fired ceramics):
	  o use as crock for plant pots or dispose of safely at local refuse centre
	  o arrange for safe disposal by third party specialist in waste removal.

CRK4.7	**Different ways of presenting products to client:**
	• via in-person presentation
	• via presentation online
	• via postal/courier
	  ○ wrap products very securely to avoid breakages
	  ○ sustainability of packaging
	  ○ using eco-friendly cushioned packaging materials (for example, corrugated card, tissue paper, honeycomb paper roll, biodegradable foam)
	• presentation of packaged products
	  ○ branded packaging (for example, stamped with logo).

Performance Outcome 5: Review and evaluate product and activities against the original design or proposition to refine product

What skills do students need to demonstrate?

CRS5.1 Evaluate the extent to which the finished product meets the design brief:
• apply success criteria to evaluate the finished product:
  ○ determine if the product was completed within agreed timescales
  ○ identify variance in the expenditure against set budget
  ○ determine quality of the finished product:
  – fitness for purpose
  – design interpretation/meets client requirements
  – aesthetic appeal
  – sustainability of the design process and finished product
  ○ feedback from client was responded to
  ○ end-user (client) satisfaction
  ○ comparison of evaluation findings against student design
  ○ reflection on outcome and future developments
  ○ record and document evaluation
(D5, E1, E3, E4, E5, M2, M5, M6, M8, M9)

CRS5.2 Review and assess the final outcome against the production schedule:
• apply reflective practice to review the final outcome:
  ○ review efficiency and waste with considerations
• review selection and application of:
  ○ raw materials
  ○ processes and techniques
  ○ tools and equipment:
  – quantities of materials ordered
  – planning and use of time
• ethical and sustainable approaches to the design process
• review the quality with consideration towards:
  ○ suitability of raw materials
  ○ design decisions
  ○ processes and techniques employed to achieve desired effect
  ○ tools and equipment applied to achieve desired outcome
  ○ effectiveness of quality assurance tests and processes
• cost effectiveness with consideration towards:
  ○ sourcing and quality of raw materials
  ○ efficient planning and project management
• compare reflective practice findings against production schedule
• record and document findings
(D3, D4, E1, E3, E4, E5, M2, M9, M10)

CRS5.3 Establish if design brief has been achieved and ascertain areas for future improvement:

- implement appropriate evaluation methods with the end user to determine:
  - levels of satisfaction
  - fitness for purpose
  - areas for improvement
  - evaluation methods may include:
    - customer satisfaction survey
    - focus groups
    - user testing
- record and document evaluation findings
- draw conclusions and express opinions using evaluation findings to identify areas for future improvement

(D3, D4, D5, E1, E2, E4, E5, E6, M5, M6, M10)

CRS5.4 Reflect on outcome, update digital portfolio and consider actions for future development:

- reflect, record and document findings of reflective practice including:
  - examples of good practice
  - identified improvements to design processes
  - areas for future improvement
  - ideas for future innovation

(D2, D4, E3, E4, E5)

What underpinning knowledge do students need?	
CRK5.1	**How to assess the final product against the original brief and production plan:** • success criteria: o timescales o budget o quality: – raw materials used – processes and techniques applied – tools and equipment used – design interpretation o fitness for purpose o completed on time o completed within set budget o dimensions are suitable o fitness for purpose (ergonomics, waterproof), meets customer requirements o meets end-user requirements: o customer satisfaction survey o focus groups o user testing

	• meets client's satisfaction:
	  o review client feedback from each stage of design
	  o final client interview
	  o client satisfaction survey.

CRK5.2	**How reflective practice is used within the design process to inform decision making, for example, revisions, justifications, choices:**
	• reflective documents – record of ideas, learning, feelings, observations, thoughts and emotions:
	  o provides rationale for decision-making process
	  o challenges own decision-making process
	  o considers ideas not taken forward to inform further development or revisions
	  o reviews assumptions that may later be tested
	  o remains open-minded to new and different approaches
	• peer groups – discussion and feedback with colleagues or other practitioners:
	  o provides fresh insight into decision making
	  o challenges own assumptions
	  o offers benefits of others' experiences and sharing good practice
	• formative evaluation – ongoing reflection throughout the process:
	  o reviews for suitability of selected processes, materials, tools and techniques at each stage of design
	  o provides opportunity for timely revision
	  o implements feedback from client, customer and end user at each stage
	• summative evaluation – final reflection providing unbiased and evidence-based conclusions:
	  o reviews the outcome of decisions and choices
	  o identifies possible improvements
	  o identifies good practice.

CRK5.3	**How reflective practice can be used to plan progress and future development:**
	• use and document reflective practice to support:
	  o identify improvements in processes and techniques used to be applied in future developments
	  o highlight good practice demonstrated that can be shared and applied in other projects
	  o improve the quality of finished product by reviewing at milestones throughout the process
	  o encourage innovation and experimentation to create new solutions
	  o reduce the potential for mistakes by understanding each step in the process
	  o improve the efficiency of design process
	  o identify the suitability of tools and techniques to achieve the required outcome

	○ increase understanding of the concept to finished product process ○ develop confidence in the application of repeated processes.
CRK5.4	**How to apply knowledge gained to future projects:** • plan: ○ plan required improvements • do: ○ standardise and optimise processes • review: ○ analyse results ○ review costs • act: ○ review the solution ○ capture data at each stage of production.

Scheme of Assessment: Ceramics Maker

There are two task assessments for this Occupational Specialism.

Both tasks are completed during a window set by Pearson, during which Providers schedule supervised assessment sessions. Task 1 activity 1 is timetabled by Pearson.

Task 1 is an extended 'Design and Make' task.

The task consists of activities grouped into nine substantive activities.

Task 2 is a Make to a specification task that consists of substantive activities.

These tasks are important to ensure students can demonstrate threshold competence and are able to evidence all the skills required by the Performance Outcomes.

Occupational Specialism Task 1 – Design and Make
Internally assessed, externally moderated project: 66 hours and 50 minutes **189 marks**
Performance Outcomes In this task students will: **PO1** – Analyse, interpret and respond to a creative proposition or a brief taking on board purpose and end user **PO2** – Refine and communicate ideas for creative product development **PO3** – Select and test materials, processes, tools and techniques to determine suitability for purpose **PO4** – Use selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the brief **PO5** – Review and evaluate product and activities against the original brief or proposition to refine product.
Assessment overview Task 1 is made up of nine substantive activities. • Activity 1: Interpret the brief and conduct research • Activity 2: Ceramic ideas and experimentation with 2D/3D ceramic materials, techniques and processes • Activity 3: Presentation, feedback and refinement of ideas • Activity 4: Pitch preparation • Activity 5: Pitch presentation • Activity 6: Final testing phase • Activity 7: Produce final technical drawings, final costings and final production schedule • Activity 8: Make and complete ceramic work • Activity 9: Evaluation. Students respond to a given scenario to complete Task 1. They are assessed on their application of the skills listed for the Performance Outcomes.

Students are not assessed against specific 'knowledge' outcomes but are expected to draw on and apply related knowledge to ensure appropriate outcomes when applying the skills in response to an assessment scenario.

Students undertake the assessment under supervised and controlled conditions.

The assessment takes place over multiple sessions, up to a combined duration of 66 hours and 50 minutes.

The task outcomes consist of a physical item or items that have been designed and made, supported by a portfolio of evidence submitted electronically.

This task is set by Pearson and marked by the provider. Pearson will externally moderate the marks.

Occupational Specialism Task 2 – Make to a specification

Internally assessed, externally moderated task: 21 hours

87 marks

Performance Outcomes

In Task 2 students will:

PO4 – Use selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the brief

PO5 – Review and evaluate product and activities against the original brief or proposition to refine product.

Assessment overview

Task 2 is made up of five substantive activities.

- Activity 1: Prepare clay, slabs and template then make coil form
- Activity 2: Cut slabs, assemble planter and decorate coiled form
- Activity 3: Throw and finish a lidded container
- Activity 4: Glaze the lidded container and undertake final quality checks
- Activity 5: Evaluation.

Students respond to a given scenario including a technical specification to complete a technical making task or tasks. They are assessed on their application of the skills listed for the Performance Outcomes.

Students are not assessed against specific 'knowledge' outcomes but are expected to draw on and apply related knowledge to ensure appropriate outcomes when applying the skills in response to an assessment scenario.

Students undertake the Make to a specification task under a combination of supervised and controlled conditions.

The assessment takes place over multiple sessions, up to a combined duration of 21 hours.

The Make to a specification task outcomes consist of physical objects that have been made to a set specification, supported by a portfolio of evidence submitted electronically.

This assessment is set by Pearson and marked by the provider. Pearson will externally moderate the marks.and marked by the provider. Pearson will externally moderate the marks.

Administration

Providers must follow the guidance in the following:

- General Administrative Support Guide
- Administration Support Guide for the specific Technical Qualification Occupational Specialism (if applicable)

These are located on the Training and Admin Support webpage.

Performance Outcome		Weighting	
		Raw marks	% of total marks
PO1	Analyse, interpret and respond to a creative proposition or a brief taking on board purpose and end user	32	11.9
PO2	Refine and communicate ideas for creative product development	39	14.4
PO3	Select and test materials, processes, tools and techniques to determine suitability for purpose	57	21.1
PO4	Use selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the brief	124	45.9
PO5	Review and evaluate product and activities against the original brief or proposition to refine product	18	6.7

Resources for the delivery of Ceramics Maker

Providers are required to have the following resources to deliver this OS:

- IT suite with access to the internet and design software (for example, Canva, SketchUp, Blender, CAD, Adobe Creative Cloud, PowerPoint, Photoshop/Illustrator, InDesign)
- online subscriptions (for example, Ceramic Review, Crafts, Ceramic Art Daily, Glazy.org)
- relevant subject-specific books, journals
- teachers with qualifications and/or experience in the ceramics sector
- a curriculum team with experience and knowledge that span the breadth of the qualification content.

Assessment Task	Resource required
1 'Design and Make' task	• traditional drawing materials media (for example, paper, pencil, ink, paints, collage materials) • digital portfolio • photographic equipment • ceramic studio containing standard clays, materials, tools and equipment, including access to raw glaze materials • computer, projection screen, presentation software (for example, PowerPoint, Prezi, etc.) • audio-visual recording equipment • clock/phone timer • any props or extra materials to enhance the display of student work. Pearson-provided resources: • reference list template • experiment recording templates • health and safety recording template • peer feedback template • costings template • production plan timeline template • client feedback template • final testing materials record • contingency plan template • making record template • final design making record template • evaluation template. The specificity of material quantities will be released to providers prior to assessment.

Assessment Task	Resource required
2 Technical 'Make' task	• terracotta clay • terracotta slurry/slip for joining • paper, thin card, pens and pencils, 30cm ruler, set square, compass, scissors, craft knife, masking tape • porous surface suitable for kneading/wedging clay, weighing scales, ware boards, rolling cloths, rolling pins, guide rails of various thicknesses, wire, needle, potter's knife, scalpel, serrated and smooth kidneys, surform, wooden rib, rubber kidneys in a variety of stiffnesses, wooden modelling tools, sgraffito tools, paddle/spatula, small and large sponges, plastic bowl, plastic containers, bevel tool, spirit level, banding wheel (turntable), spoon/stone for burnishing, heat gun, access to sink with hot and cold running water, hot box, damp cupboard, plastic wrapping material • throwing wheel, measuring jugs of various sizes, liquid wax resist • PPE mask, sandpaper, carborundum stone, glazing tongs and/or mesh pincers, large glazing bowls or trays, slip trailers, metal kidney, rubber gloves, long rubber gloves, a selection of hake brushes, tea strainer • three different colours of slip, three slip trailers, a selection of paint and hake brushes, feather, newspaper, wax resist, plaster batts (for quick-drying wet slip or printing/trailing) • unkneaded stoneware reclaim clay of a workable consistency • unkneaded stoneware wet reclaim clay • unkneaded stoneware stiff reclaim clay • stoneware slurry/slip for joining • a selection of at least six different coloured and transparent earthenware dipping glazes • a selection of at least six different stoneware dipping glazes, with at least one that is not food-safe and labelled as not food-safe • a selection of metal oxides in diluted liquid form • a selection of underglazes in liquid form • Task 2 digital portfolio. Pearson-provided resources: • glazing record template • evaluation template. The specificity of material quantities will be released to providers prior to assessment.

Ceramics Maker Global resource list

- subject-specific books, magazines, journals and other print materials
- work bench and stool, wedging bench, plaster batts
- sink with running hot and cold water and a means for the safe disposal of waste (sediment tank/clay trap)
- electric kiln
- damp cabinet
- drying cabinet/racks
- a range of clays (including terracotta and stoneware)
- a range of glazes (for terracotta and stoneware temperatures)
- a range of glazing tools (for example, tongs, carpet tile, rubber and latex-alternative gloves)
- pottery equipment (for example, pottery wheel, pug mill, filter press, blunger, extruder, turntable, wooden boards)
- a range of coloured slips
- a range of metal oxides
- a range of coloured underglazes
- wax resist liquid
- a range of measuring tools (ruler, T-square, protractor, compass, weighing scales, callipers, measuring jug)
- a range of decorative tools (for example, hake brushes, sgraffito tools, slip trailers)
- a range of finishing tools (for example, sponges/cloths, kidneys, ribs)
- a range of throwing tools (for example, dottle, loop tools, callipers, turning tools, chammy)
- a range of pottery modelling, cutting and piercing tools (for example, surform, needle, bevel tool, hacksaw, wire clay cutter, potter's knife, holemakers)
- long rolling pins, rolling cloths and guide rails and/or slab roller/slab making tools
- miscellaneous materials (for example, sieves, spoons, containers, sponges, jugs for pouring, ladles, bowls, sponges, spirit level, hair dryer or heat gun)
- spray gun and spray booth
- wrapping material for damp and drying work
- equipment for cleaning (for example, sponges, cloths, mops, buckets)
- handwashing implements (soap, antibacterial hand sanitiser, nail brush)
- Personal Protection Equipment (PPE) (for example, filter mask, gloves, aprons, goggles)
- paper, newspaper/print, cardboard (for templates and supports)

2. Jewellery Maker

Performance Outcome 1: Analyse, interpret and respond to a creative proposition or a brief taking on board purpose and end user

What skills do students need to demonstrate?
JLS1.1 Clarify the purpose of the design brief: • determine the context of the product • determine the client of the product • identify the appropriate routes to market • establish budget available to realise the product • identify timescale considerations (E5, M6)
JLS1.2 Carry out research to inform the development of the creative product: • identify and select the appropriate factors that influence the research (for example, cultural, context, other designers, trends in the industry) • identify appropriate sources of research (for example, exhibitions, magazines, making and selling spaces, and non-visual sources) • select and apply the appropriate research methodologies • document and record research findings accurately and concisely including referencing data (D4, D5, E4, E5, M5, M6)

JLS1.3 Carry out research to inform the sourcing of materials:
• identify and calculate the impact of the following:
  ○ constraints/timeline
• calculate costs required for the materials:
  ○ suppliers
  ○ production
• sustainability and ethical considerations
• document and record research findings accurately and concisely
(E4, M2, M9)

JLS1.4 Explore design principles to inform the design brief:

- experiment with the following design principles:
  - shape and form
  - texture
  - colour
  - size
- identify and select the appropriate application of each design principle to inform the design brief
- document and record findings accurately and concisely

(E4, E5)

JLS1.5 Collate findings from research:

- organise and record research findings and information logically using appropriate media (for example, mood board, mind map, digital presentation, sketchbook)
- identify appropriate concepts and themes
- summarise findings
- maintain an accurate and ongoing record of sources and references

(D1, D2, E4)

JLS1.6 Generate ideas for concept to meet the design brief:

- draw conclusions from research findings and exploration of design principles
- select and apply appropriate design tools and techniques to generate ideas for initial concept:
  - digital presentation application tools
- review and evaluate initial ideas against the requirements of the design brief and justify decisions

(D1, D2, D3, E1, E3, E4)

What underpinning knowledge do students need?	

JLK1.1	**The factors to consider for creative products when responding to a design brief:**
	• context – purpose of the design brief:
	  ○ types of contexts:
	  – one-off/limited edition art jewellery
	  – ceremonial/symbolic jewellery
	  – mass produced jewellery
	  – couture jewellery
	  – themed exhibition piece
	  – commissions
	  ○ impact of jewellery object (for example, a statement piece)
	  ○ conveying a message (for example, political, social, conceptual, narrative)
	  ○ symbolic (for example, wedding/civil partnership ring)

	• settings:
	  ○ exhibitions – usually within a gallery/museum
	  ○ jewellery for the entertainment sector:
	  – film and TV
	  – theatre
	  – music
	• market:
	  ○ retail:
	  – sale or return (SoR)
	• galleries
	• shops
	• wholesale
	• trade shows
	• online business-to-business (B2B) platforms
	• direct sales
	• craft fairs
	• websites
	• online sales platforms
	• commissions:
	  ○ one-off bespoke/personal pieces for a client
	  ○ remodelling – remodelling existing jewellery to create a new piece of jewellery
	  ○ memorial jewellery.

JLK1.2	**The factors to consider for ergonomics in jewellery:**
	• how things sit and fall:
	  ○ weight:
	  – suitable weight for the intended purpose
	  ○ scale:
	  – suitable size for the intended purpose
	  ○ position of the findings (for example, appropriate use of ear posts, appropriate position of fastening and clasps to secure item to the wearer)
	• wearability:
	  ○ comfort and tactility of the piece
	  ○ as appropriate – the longevity of materials
	• position of the piece:
	  ○ consideration to the body of the wearer:
	  – height
	  – size
	  – accessibility design.

JLK1.3	**The design principles within jewellery:** • texture • size • shape and form

	• colour • contrast • proportion • movement.

JLK1.4	**The difference between costing and pricing and the influence of cost on pricing:**
	• costing:
	  ○ expenses incurred to produce a product
	• pricing:
	  ○ the amount a customer is required to pay for the product, content or service
	  ○ expenses incurred plus retail markup and value added tax (VAT)
	  ○ profit is the difference between pricing and costing
	• influence of cost on pricing.

JLK1.5	**The factors to consider when costing a design brief:**
	• allocated budget
	• price – retail/wholesale:
	  ○ profit
	• cost of materials:
	  ○ raw materials
	  ○ fluctuating prices
	• outsourcing of specialist processes (for example, hallmarking, casting, plating)
	• additional jewellery business costs:
	  ○ public liability insurance (PLI)
	  ○ cost of packaging and display accessories
	  ○ import and export costs
	  ○ marketing and advertising
	• routes to market:
	  ○ online selling platform fees:
	  – social media
	  – websites
	  – trade fair expenses.

JLK1.6	**The key features of research methodologies used to support the development of a design brief:**
	• qualitative research – collection, analysis and interpretation of non-numerical information:
	  ○ gathers opinion and preferences
	  ○ asks open-ended questions
	  ○ requires small respondent size
	• quantitative research – collection, analysis and interpretation of numerical information:
	  ○ identifies patterns and trends
	  ○ makes predictions based on cause and effect

	○ forms conclusions about broader populations ○ asks closed questions ○ requires large respondent size ○ collection of original data • primary: ○ original data and information collected by researcher • secondary: ○ existing research materials compiled by others • accurately record research sources: ○ artist/author ○ bibliographic reference (for example, title of publication) ○ source (for example, location or uniform resource locator (URL) ○ date (for example, year of publication).
JLK1.7	**Consideration factors for research to support the development of the design brief:** • the market, competitors and current trends: ○ ideology of markets, market trends ○ identifies competitors, designers and businesses ○ gains insight into regional variances ○ identifies different retail options for the product ○ improves knowledge of current and new and emerging materials and production techniques ○ provides inspiration ○ avoids replication of existing ideas • cultural context: ○ provides insight into values and ideology of movements. ○ awareness of possible cultural sensitivities (for example, cultural appropriation, beliefs and values, customs, respect) • historical context: ○ influence of art and design movements (for example, Art Deco, Bauhaus), artists, designers, practitioners and materials, processes and techniques ○ supports understanding of associated design and production processes ○ influence of political ideologies, conflicts, economics, living conditions, access to materials (local/imported), value of rarer materials and how this impacts design/trends ○ impact of social identity on a design • sustainability and ethical sourcing of materials, processes: ○ increases awareness of the environmental impact of raw materials used and processes applied ○ understanding supply chain and end of life of products ○ identifies ethical sources for materials ○ improves knowledge of current production methods including packaging

	○ efficiency of materials, minimising waste, recycling or reusing materials in the creation of products ○ understanding of potential cost implications.
JLK1.8	**The importance of different sources for research to support the development of the design brief:** • museums, exhibitions and galleries: ○ enables first-hand experience of viewing products ○ provides an opportunity to meet curators, professionals and experts • physical stores – high street and independent: ○ enables first-hand experience of viewing products ○ provides opportunities to handle products • online stores: ○ offers wide ranging and variety of examples to identify trends and styles • books, magazines, catalogues and online journals and blogs: ○ easily accessible ○ provides opportunities to study other works ○ identifies trends and styles ○ provides insight into technologies, processes and techniques • digital/online sources: ○ vast range, also covers new and emerging technologies ○ social media enables interaction with makers ○ up to date with trends • workshop visits: ○ provides opportunities to meet designers, practitioners and experts ○ provides insight into processes and techniques • observations and insights gained from experience: ○ draws information from unexpected sources, previous projects and customer satisfaction feedback • commercially available market analysis reports: ○ breadth of market information • surroundings: ○ design inspiration (for example, colours, textures and pattern).
JLK1.9	**The types of design tools and techniques used for presenting research and concepts in response to a design brief:** • drawing (hand or digital) • 3D CAD (computer-aided design) representation • mind map, spidergram, word cloud (or other graphic representations) • sketch book • digital presentations • mood boards • physical samples and test pieces • maquette, prototype, scale model (in any medium).

Performance Outcome 2: Refine and communicate ideas for creative product development

What skills do students need to demonstrate?

JLS2.1 Review and select ideas for further development by assessing their suitability against the design brief:
• identify the appropriate best practice method to review design ideas:
  ○ formal
  ○ informal
• identify and select suitable ideas for development
• compare suitability of ideas against the purpose of the design brief
• calculate the costs required to achieve selected ideas against the design brief
(D4, E5, M2, M9)

JLS2.2 Present and communicate ideas and design requirements to colleagues for feedback:
• select and organise the appropriate design tools and techniques to present ideas:
  ○ mood boards (for example, physical/digital boards)
  ○ mind maps
  ○ contextual journal
  ○ paper/card maquettes/3D digital modelling
  ○ hand or digital drawings
• communicate ideas using the relevant methods including industry-standard terminology
• ask and respond to questions during the presentation
• document and record appropriate feedback accurately and concisely
(D1, D2, D3, E1, E2, E4)

JLS2.3 Respond to informal feedback: • review feedback ensuring the type, quality and reliability of the data is fit for purpose • listen actively and discuss feedback with colleagues • ask and respond to questions where appropriate • identify any changes and refinements from the feedback to improve the design • select appropriate design tools and techniques based on informal feedback • summarise main ideas from discussions and draw conclusions • document and record each stage of the feedback process accurately and concisely (D2, D4, E2, E4, E6, D5)

JLS2.4 Present ideas formally to the client using appropriate presentation tools:

- prepare refined ideas for formal presentation to the client:
  - select and organise the appropriate formal presentation tools:
    - sketch books and digital drawings
    - models and maquettes
    - test pieces
- digital presentation application tools:
  - organise ideas and information with a logical approach
- presentation or pitch to the client:
  - explain decision-making process
  - ask and respond to questions from client during the presentation
  - interpret and respond to non-verbal cues
  - document and record appropriate feedback from client accurately and concisely

(D1, D2, D3, E1, E2, E3, E4)

JLS2.5 Respond to formal feedback from the client and evidence refinements and development of the design:

- select the appropriate methods to refine and develop the design in response to formal feedback:
  - use annotations to review and adapt test pieces and designs
  - identify any changes and refinements to improve the design
  - listen actively and discuss feedback with the client
  - ask and respond to questions where appropriate
  - select appropriate materials, tools and processes to meet the outcomes of the refined design
  - summarise main ideas from discussions and draw conclusions
  - document and record each stage of the process accurately and concisely

(D4, E2, E4, E5, E6)

What underpinning knowledge do students need?	

JLK2.1	**The best practice methods for communicating creative ideas:**
	• formal and informal – methods used to communicate creative ideas to colleagues:
	  ○ spoken
	  ○ written
	  ○ visual
	  ○ presentation – spoken/written/visual/audio-visual.

JLK2.2	**The industry-standard language and symbols used to communicate design requirements within jewellery:**
	• industry terminology used in jewellery:
	  ○ specialist hand tools – tools used to create jewellery
	  ○ fittings and findings – attachments that allow the jewellery to be worn

	○ jewellery making techniques – methods used in the creation of jewellery ○ metal alloys • industry symbols used in jewellery: ○ hallmarking ○ optional marks ○ The Control of Substances Hazardous to Health Regulations 2002 – hazard symbols.
JLK2.3	**The potential capabilities and limitations of existing and emerging technologies:** • drawing and design: ○ computer-aided design (CAD) ○ 3D modelling computer programs (for example, Rhinoceros 3D, SketchUp, Tinkercad) ○ potential capabilities: – creates a miniature detailed design model that cannot be made by hand ○ potential limitations: – requires investment in hardware, training, software, support. • existing technologies: ○ computer-aided manufacturing (CAM) (for example, 3D printing, precious metal laser sintering and microsetting, laser cutting) ○ casting • computer numerical control (CNC) (for example, micro water jet cutting): ○ potential capabilities: – reduces costs ○ potential limitations: – price of equipment • emerging technologies: ○ virtual reality (VR): ○ potential capabilities: – reduces costs ○ potential limitations: – increases price of service.

Performance Outcome 3: Research and experiment with materials, tools, processes and techniques to determine suitability for product development/to realise the design

What skills do students need to demonstrate?

JLS3.1 Experiment with cutting, joining and shaping and forming techniques using the appropriate tools and equipment to achieve the design brief:
• explore a range of cutting techniques to test potential and limitations
• explore a range of joining techniques to test potential and limitations:
  ○ cold connections
  ○ hot connections
• explore a range of shaping and forming techniques to test potential and limitations
• explore different tools and equipment as appropriate for different techniques
• accurately document and record
(D2, D3, E1, E3, M2, M3, M9)

JLS3.2 Experiment with techniques to apply textures and finishes using the appropriate tools and equipment to achieve the design brief:
• explore a range of techniques to apply textures to test potential and limitations
• explore a range of techniques to apply finishes to test potential and limitations
• explore different tools and equipment as appropriate for different techniques
• accurately document and record:
  ○ materials used
  ○ results from testing materials including potential and limitations of choices
(D2, D3, E1, E3, M2, M3, M9)

JLS3.3 Experiment with techniques to add settings and embellishments using the appropriate tools and equipment to achieve the design brief:
• explore creating a range of handmade mounts to test potential and limitations
• explore a range of techniques to apply embellishments to test potential and limitations
• explore different tools and equipment as appropriate for different techniques
• accurately document and record:
  ○ materials used
  ○ results from testing materials including potential and limitations of choices
(D3, M2, M3)

JLS3.4 Experiment with materials to realise the design brief: • explore the potential of using different materials, textures and finishes • apply a range of design tools and techniques to accurately record research (for example, annotations, mood boards, mind maps, contextual journal) • apply appropriate technical language in all documentation accurately and concisely (D2, D3, E1, E3, M2, M3, M9)

JLS3.5 Consider the costs of selected materials and sustainability within the constraints of the design brief:

- identify the factors that contribute to purchasing selected materials
- identify the sustainability factors to consider when purchasing materials

(M2, M9)

JLS3.6 Experiment with materials and techniques to test potential:

- create test pieces by applying the appropriate processes and techniques, for example:
  - cutting
  - joining
  - jewellery casting
  - stone setting
  - forming and shaping
  - texturing:
    - low relief work (for example, chasing and stamping, and repoussé)
  - finishing

(D6, M1, M3, M4)

JLS3.7 Use outcomes of testing to make decisions on materials and techniques:

- record and document each stage of the process
- evaluate results of each outcome from the test pieces:
  - materials
  - processes and techniques
- draw conclusions on the materials and techniques tested and justify decision making

(D3, D4, E1, E2, E3, E4, E5, M10)

JLS3.8 Present product concepts using the appropriate design tools and techniques:

- apply the appropriate design tools and techniques:
  - models and maquettes
  - drawing and designs
  - test pieces
  - mood boards

(D1, D2, E1, E2, E3)

JLS3.9 Create and use technical documents to maintain accurate records of testing of materials and techniques:

- apply technical language accurately and concisely
- time taken for each process
- materials, tools and equipment used including health and safety requirements
- document any limitations of the materials
- document processes and techniques used and any problems that occurred

(D4, E1, E3, E4, E5, M2)

What underpinning knowledge do students need?	

JLK3.1	**The different methods used to create jewellery:**
	• bench-made jewellery – jewellery formed and fabricated by hand:
	  ○ tools and equipment
	  ○ techniques and processes:
	  – joining using hot and cold connections
	  – cutting (for example, hand and machine cutting)
	  – soldering
	  – forming (for example, carving, casting)
	  – textures
	  – finishes
	  – stone setting
	  – embellishment
	• jewellery casting:
	  ○ process to create multiples of the same design
	• construction from non-metal materials
	• digital production:
	  ○ 3D modelling computer programs
	  ○ computer-aided manufacturing (CAM) (for example, 3D printing, laser cutting)
	  ○ computer numerical control (CNC) (for example, micro water jet cutting)
	  ○ computer-aided design (CAD)
	  ○ virtual reality (VR)
	  ○ rapid prototyping.

JLK3.2	**The characteristics, cost and limitations of materials for making jewellery:**
	• knowledge of materials:
	  ○ physical properties
	  ○ limitations (including malleability, weight, cost, processes required, sustainability)
	• materials:
	  ○ precious (for example, gold; silver; platinum)
	  ○ other metals:
	  – base metals, nonferrous metal (for example, aluminium)
	  ○ wood
	  ○ ceramics
	  ○ plastics (for example, acrylics, resin)
	  ○ textiles
	  ○ leather
	  ○ precious stones
	  ○ semi-precious stones
	  ○ lab-created stones (for example, cubic zirconium)
	  ○ polymer clays
	  ○ waxes

	○ sustainable materials and approaches: – the production of new materials – repurposing of materials – reclaimed materials – blending of recycled materials.
JLK3.3	**The ethical considerations when sourcing different raw materials and the principles of circular economy for a sustainable production model:** • ethical considerations: ○ Fairtrade metals ○ conflict-free diamonds • principles of circular economy: ○ circular design concepts: – supply chain – modular – longevity – efficiency of materials – multi-function – potential for re-use/recycling.
JLK3.4	**The range of methods used for repurposing recycled and reclaimed materials in jewellery:** • reusing existing materials in a new way (for example, fishing wire can be used to make chain links) • production of new materials (for example, setting paper in resin) • blending of recycled materials.
JLK3.5	**The purpose of using different cutting techniques in jewellery making:** • hand cutting: ○ piercing – creates detailed shapes ○ guillotining – provides long/short straight lines when cutting ○ shearing/wire cutting – allows for quickly cutting small pieces of metal ○ disc cutting – cuts discs of metal and specialist shapes • drilling: ○ hole making for mechanical function ○ provides additional detail or surface patterns ○ provides blade access when piercing internal forms • machine cutting: ○ laser cutting – creates multiples in plastics quickly and accurately ○ CNC – creates multiples in metals quickly and accurately.

JLK3.6	**The techniques required to shape and form materials for making jewellery:**
	• shaping techniques:
	  ○ annealing
	  ○ bending and forming:
	  – doming
	  – swaging
	  – hammering
	  – hot/cold forging
	  – wire bending
	  – scoring and folding
	  – chasing
	  – repoussé
	• wax modelling and carving
	• casting
	• carving wood
	• surface techniques:
	  ○ patination
	  ○ plating
	  ○ enamelling
	  ○ oxidisation
	  ○ stamping
	  ○ sandblasting
	  ○ intaglio
	  ○ hammer techniques
	• engraving:
	  ○ laser engraving
	  ○ hand engraving
	• stone setting
	• mount making.

JLK3.7	**The factors to consider when joining metals:** • some metals cannot be soldered conventionally • different metals have different melting points • some silver metals are better for fusing • design considerations.

JLK3.8	**The types of techniques required to join a range of materials:**
	• cold connections/rivets:
	  ○ decorative
	  ○ tube
	  ○ wire
	• stitching:
	  ○ textile
	  ○ wire

	• hot connections:
	  ○ soldering
	  ○ fusing
	  ○ sweat soldering
	  ○ laser welding
	  ○ micro-tungsten inert gas (micro-TIG).

JLK3.9	**The materials and equipment required for soldering:** • solder (for example, hard, medium, easy, extra easy and enamelling solder) • cleaning equipment/materials • equipment for holding and supporting work • heat resists/barrier.

JLK3.10	**The techniques required to apply different textures and finishes for jewellery making:**
	• techniques to apply textures and finishes:
	  ○ etching – using acid to eat away metal to create a texture/pattern
	  ○ intaglio – carves or engraves images in gemstones leaving a hollow impression in the untouched surface
	  ○ stamping – creates textures on metals using metal stamps/punch and a hammer
	  ○ roll-printing – presses a pattern or image into a sheet of metal using a rolling mill
	  ○ hammer techniques – applies surface patterns using various hammers
	  ○ filing – creates texture using hand and needle files
	  ○ engraving – creates a pattern or design by using a graver to carve into the material
	  ○ polishing
	  ○ varnishing
	  ○ patination – film formed on the surface to create colour using a range of acids.

JLK3.11	**The purpose of using different materials for polishing and finishing:**
	• purposes – adds textures, removes scratches, removes oxides/contaminants, polishes
	• materials:
	  ○ emery paper
	  ○ wet and dry paper
	  ○ polishing cloths
	  ○ polishing threads and abrasive cords
	  ○ motor polishing accessories
	  ○ ultrasonic machine.

JLK3.12	**The types of techniques used for stone setting and embellishment:**
	• stone setting – securely setting or attaching a stone:
	  o mounts – metal surrounding the stone
	  o settings – fixing of precious/semi-precious stones
	  o embellishment – a decorative feature to enhance the jewellery object.

JLK3.13	**The steps required to prepare surfaces prior to polishing and finishing:** • pre-polishing – prepares surface for polishing by removing deep marks, scratches and fire stain • polishing – smooths surface and achieves a high shine • final finish – hardens the surface to provide additional strength to the metal and helps maintain shape.

JLK3.14	**The purpose of different roles within the process of jewellery making:**
	• jewellery designer/creative director:
	  o develops new products and ranges
	• CAD designer/technician:
	  o produces STL and other appropriate files for production purposes
	• independent designer jeweller:
	  o provides unique jewellery pieces from their own designs. Often both designing and making work
	• goldsmith/silversmith:
	  o uses a range of different techniques and precious metals to produce one-off or production items of varying scales and values
	• caster:
	  o generates multiple casts for the production process
	• enameller:
	  o applies glass and heat to the metal to create decorative finishes
	• bench mounter or jobbing jeweller:
	  o makes, repairs and alters items in a retail or production environment
	• model maker:
	  o creates models which are used for mass production or one-off pieces through the casting process
	• mount maker and stone setter:
	  o skilled in the art of stone setting
	• polisher, finisher and plater:
	  o specialises in the polishing and finishing of jewellery and silverware
	• engraver:
	  o applies lettering, crests and patterns to items.

JLK3.15	**The purpose of different tools and equipment used in making jewellery:**
	• hand tools:
	  o jeweller's peg – a wooden support to hold work
	  o pliers – form and bend materials and hold small items
	  o saw frame – cuts out decorative shapes
	  o needle files – used to shape and smooth metal
	  o hammers – used for decoration and forming

	○ cutters/shears – cut small pieces of metal • power tools: ○ handheld rotary tool – applies engraving to jewellery items ○ pendant motor – drills, sets stones and polishes ○ polishing motor – polishes larger jewellery items using a large rotating wheel ○ pillar drill – drills larger items • additional equipment: ○ rolling mill – reduces the thickness of sheet metal, rolls wire and can be used for roll printing ○ fly press – exerts pressure on a block of rubber pushing it into the metal and die creating an even, smooth, 3D form ○ guillotine – cuts larger pieces of sheet and rod metal ○ set of stakes – shapes and forms metal using shaped pieces of hardened polished steel ○ clamps and vices – holds tools or metal while working ○ safety pickle or acid bath – cleans metal and removes oxides.
JLK3.16	**Good practice for the maintenance of tools and equipment:** • maintenance of power tools: ○ regular portable appliance testing (PAT) ○ safe storage to avoid hazards or damage to equipment ○ always use with care and follow manufacturers' guidelines ○ keep maintenance records of tools and equipment • maintenance of hand tools: ○ ensure tools are well oiled and clean to avoid rust. • limits of responsibility • escalation: ○ report faulty machinery or equipment to an approved technician or manufacturer.
JLK3.17	**The importance of reducing waste when making jewellery:** • lowers operating cost • prevents pollution by reducing the use of plastic materials (for example, using safety resin instead of toxic resin) • contributes to a more sustainable business model (for example, circular economy) • increases efficient use of materials, providing the potential to produce more products from the same amount of material • reduces unnecessary waste to landfill.
JLK3.18	**The different methods used to manage waste:** • metal scrap pots for managing different types of metal waste • skin/tray to collect lemel • paper recycling methods.

Performance Outcome 4: Use selected materials and apply appropriate processes, tools and techniques to realise ideas and refine the product

What skills do students need to demonstrate?

JLS4.1 Interpret the requirements of the technical specification for the design brief:
• read, understand and synthesise requirements of the technical specification:
  ○ different ring sizes, bangle sizes and chain lengths
  ○ appropriate length and shape of wire
  ○ translate and clearly explain requirements for stone setting
(E1, E2, E4, E5, M5, M7)

JLS4.2 Create a production schedule:
• create a clear, organised and concise schedule to communicate the timeline from design to the making of the creative product:
  ○ identification and selection of appropriate materials required to create the product
  ○ calculation of the quantity required, ensuring an accurate quantity is available
  ○ selection of appropriate techniques
  ○ identification of the appropriate sequence of processes to realise ideas
  ○ identification of the timescale to create the product
  ○ costing considerations
(D2, E1, E3, E4, E5, M2, M8, M9, M10)

JLS4.3 Prepare workspace safely and efficiently: • ensure that work area is clean and tidy • read, understand and comply with workshop systems and procedures • read, understand and comply with health and safety requirements (E5)
JLS4.4 Prepare appropriate materials to create the product: • select appropriate materials identified in individual production plans • calculate the quantity of material required to make the piece • ensure calculations are accurate to avoid wastage (E4, E5, M2)
JLS4.5 Select and handle tools and equipment safely to achieve the desired outcome: • carry out a health and safety assessment to identify and mitigate risks and to ensure tools and equipment are used appropriately • use the appropriate hand and/or powered tools and equipment for each stage of the production schedule • comply with health and safety processes and procedures including wearing appropriate Personal Protection Equipment (PPE) • ensure tools are used appropriately • report any damaged/broken tools and equipment to the appropriate staff member (E1, E2, E3, E4, E5)

JLS4.6 Consider additional features and their associated cost implications:

- identify jewellery production costs for additional features that require outsourcing (for example, hallmarking, casting, plating and engraving)
- identify cost of the labour and materials
- postage and packaging costs when sending items to and from outsourced production specialists

(E4, E5, M2, M8, M9)

JLS4.7 Execute the production plan using appropriate techniques to realise the final design:

- select and apply appropriate forming and shaping techniques
- select and apply appropriate joining techniques using hot and cold connections
- select and apply appropriate texturing and finishing techniques

(E5)

JLS4.8 Use materials efficiently being mindful to minimise waste:

- consider minimising waste at the design stage
- measure accurately to avoid waste
- plan step by step construction as necessary
- select and use appropriate tools, equipment and processes
- identify which materials can be recycled and/or repurposed

(E4, E5, M3)

JLS4.9 Check work for accuracy:

- compare work to the original technical specification to ensure accuracy
- check measurements and adjust where necessary
- identify flaws/faults in materials and apply the appropriate response
- ensure work is finished to the required standard

(E4, E5, M1, M2, M3, M4)

JLS4.10 Maintain own workspace and hand and/or powered tools in accordance with professional practice and rectify any defects should they arise:

- comply with health and safety workplace processes and procedures
- refer to risk assessment to ensure safe working practices are adhered to
- maintain workspace and store tools following workplace/manufacturers' guidelines to reduce the risk of defects
- document and record maintenance of tools and equipment accurately and concisely following manufacturers' guidelines for safe storage and maintenance tools

JLS4.11 Collect and dispose of materials safely and ecologically:

- follow workplace/workshop health and safety practice, policies and procedures for safe and ecological disposal of materials
- working with technicians/workshop supervisor to ensure efficient and safe storage and disposal of materials, for example:
- apply appropriate paper recycling methods (for example, waste collection, sorting, shredding)
- ensure chemicals are disposed of in line with provider health and safety policy and environmental legislation

(E5, M5)

JLS4.12 Present products in an appropriate way for distribution to market:

- research, select and identify packaging and display props relevant to the design brief using the appropriate design tools and techniques
- review and evaluate presentation against the requirements of the design brief and justify decisions
- consider sustainable choices when researching packaging and display materials

(D3, E2, E3, E4, E5, M2)

What underpinning knowledge do students need?	
JLK4.1	**Features of technical specifications used to describe processes and finishes:** • size, scale, width and length: ○ gauge and shape of wire (for example, D-section, square, rectangle, round) • considerations for stone setting • finishes.
JLK4.2	**The size, scale, width and length calculations that are applied to individual jewellery items:** • ring • necklace • bracelet.
JLK4.3	**The acceptable tolerances and tools required for accuracy within jewellery making:** • acceptable tolerances: ○ precision required for correct sizing • measuring tools required • interpreting size and scale using appropriate sizing/scaling tools • marking out tools to produce accurate measurements within a defined parameter.

JLK4.4	**The application of legislation and regulations in the context of jewellery making:**
	• The Control of Substances Hazardous to Health Regulations 2002:
	  ○ safe disposal of toxic chemicals and consideration of environmental legislation compliance
	  ○ following manufacturers' guidelines:
	  – ventilation/extraction system to reduce fumes (for example, when working with resin, oxidising, etching)
	  ○ wearing industry-standard personal protective equipment (PPE) (for example, wearing a heavy-duty face mask when working with resin)
	  ○ The Provision and Use of Work Equipment Regulations 1998:
	  ○ using safety power stop for machines in an emergency
	  ○ maintaining and repairing tools and equipment

	○ keeping maintenance records of tools and equipment ○ portable appliance testing (PAT) of all electrical equipment ○ complying with industry safety standards • Health and Safety at Work etc. Act 1974: ○ undertaking risk assessments to identify hazards (for example, no trip hazards in design studio/craft workshop) ○ ensuring only adequately trained employees use equipment • The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013: ○ maintaining an accident book: – recording incidents and near misses ○ providing a safe working environment that is properly maintained (for example, hazardous and dangerous chemicals stored in a lockable metal cupboard) • manual handling: ○ following correct guidance and training ○ taking reasonable care over own and others' health and safety: – remove obstructions from walkways – follow workplace system for soldering. – hallmarking regulation compliance.
JLK4.5	**The workplace systems and procedures to ensure compliance with health and safety in jewellery making:** • standard workplace systems (SOPs): ○ workshop policy and procedures (for example, induction; safe working distances) ○ health and safety requirement compliance.
JLK4.6	**The factors to consider when presenting products to clients:** • packaging and transporting safely • presentation of product ○ care instructions (for example, including a polishing cloth) ○ display • sustainability of packaging: ○ use of sustainable/recycled materials.
JLK4.7	**The factors to consider when creating a production schedule:** • materials and equipment required to create the product: ○ availability and lead time ○ quantity of materials required: – consider the quantity required to ensure an accurate quantity is available to minimise waste ○ appropriate tools for specified processes and techniques • sequence of processes and techniques • timescale: ○ creation of product including sequencing of processes and techniques ○ delivery and availability of materials

	• costing considerations:
	  ○ outsourcing requirements
	  ○ sourcing and cost of raw materials.

Performance Outcome 5: Review and evaluate the design process and product against the original brief and proposition

What skills do students need to demonstrate?

JLS5.1 Evaluate the extent to which the finished product meets the design brief:
• apply success criteria to evaluate the finished product:
  ○ determine if the product was completed within agreed timescales
  ○ identify variance in the expenditure against set budget
  ○ determine quality of the finished product:
  – fitness for purpose
  – design interpretation/meets client requirements
  – aesthetic appeal
  – sustainability of the design process and finished product
  ○ feedback from client was responded to
  ○ end-user (client) satisfaction
  ○ comparison of evaluation findings against student design
  ○ reflection on outcome and future developments
  ○ record and document evaluation
(D5, E1, E3, E4, E5, M2, M5, M6, M8, M9)

JLS5.2 Review and assess the final outcome against the production schedule:
• apply reflective practice to review the final outcome:
  ○ review efficiency and waste with considerations towards the selection and application of:
  – raw materials
  – processes and techniques
  – tools and equipment
  – quantities of materials ordered
  – planning and use of time
• ethical and sustainable approaches to the design process
• fitness for purpose (wearability) of final outcome.
• review the quality with consideration towards:
  ○ suitability of raw materials
  ○ design decisions
  ○ processes and techniques employed to achieve desired effect
  ○ tools and equipment applied to achieve desired outcome
  ○ effectiveness of quality assurance tests and processes
• cost effectiveness with consideration towards:
  ○ sourcing and quality of raw materials
  ○ efficient planning and project management
• compare reflective practice findings against production schedule.
• record and document findings
(D3, D4, E1, E3, E4, E5, M2, M9, M10)

JLS5.3 Establish if design brief has been achieved and ascertain areas for future improvement:

- implement appropriate evaluation methods with the end user to determine:
  - levels of satisfaction
  - fitness for purpose
  - areas for improvement
  - evaluation methods may include:
    - customer satisfaction survey
    - focus groups
    - user testing
- record and document evaluation findings
- draw conclusions and express opinions using evaluation findings to identify areas for future improvement

(D3, D4, D5, E1, E2, E4, E5, E6, M5, M6, M10)

JLS5.4 Reflect on outcome, update digital portfolio and consider actions for future development:

- reflect, record and document findings of reflective practice including:
  - examples of good practice
  - identified improvements to design processes
  - areas for future improvement
- ideas for future innovation

(D2, D4, E3, E4, E5)

What underpinning knowledge do students need?	

JLK5.1	**How to assess the final product against the original brief and production plan:**
	• success criteria:
	  ○ timescales – completed on time to agreed deadline
	  ○ budget – completed within set and agreed budget
	  ○ quality:
	  – raw materials used
	  – processes and techniques applied
	  – tools and equipment used
	  – design interpretation
	  ○ fitness for purpose
	• meeting success criteria
	  ○ completed on time
	  ○ completed within set budget
	  ○ dimensions are suitable
	  ○ fitness for purpose (ergonomics, waterproof), meets customer requirements
	  ○ aesthetically appealing
	  ○ feedback from client was responded to

	• meets end-user requirements:
	  o customer satisfaction survey
	  o focus groups
	  o user testing
	  o meets client's satisfaction:
	  – review client feedback from each stage of design
	  – final client interview
	  – client satisfaction survey.

JLK5.2	**How reflective practice is used within the design process to inform decision making, for example, revisions, justifications, choices:**
	• reflective documents – records of ideas, learning, feelings, observations and thoughts:
	  o provides rationale for decision-making process
	  o challenges own decision-making process
	  o considers ideas not taken forward to inform further development or revisions
	  o reviews assumptions that may later be tested
	  o remains open-minded to new and different approaches
	• peer groups – discussion and feedback with colleagues or other practitioners:
	  o provides fresh insight into decision making
	  o challenge own assumptions
	  o offers benefits of others' experiences and sharing good practice
	• formative evaluation – ongoing reflection throughout the process:
	  o reviews for suitability of selected processes, materials, tools and techniques at each stage of design
	  o provides opportunity for timely revision
	  o implements feedback from client, customer and end user at each stage
	• summative evaluation – final reflection providing unbiased and evidence-based conclusions:
	  o reviews the outcome of decisions and choices
	  o identifies possible improvements
	  o identifies good practice.

JLK5.3	**How to use reflective practice to plan progress and future development:**
	• record and document reflective practice to:
	  o identify improvements in processes and techniques used to be applied in future developments
	  o highlight good practice demonstrated that can be shared and applied in other projects
	  o improve the quality of finished product by reviewing at milestones throughout the process
	  o encourage innovation and experimentation
	  o reduce the potential for mistakes by understanding each step in the process

	○ improve the efficiency of design process ○ identify the suitability of tools and techniques to achieve the required outcome ○ increase understanding of the concept to finished product process ○ develop confidence with the application of repeated processes.
JLK3.4	**How to apply knowledge gained to future projects:** • plan: ○ plan required improvements • do: ○ standardise and optimise processes • review: ○ analyse results ○ review costs • act: ○ review the solution ○ capture data at each stage of production.

Scheme of Assessment: Jewellery Maker

There are two task assessments for this Occupational Specialism.

Both tasks are completed during a window set by Pearson, during which Providers schedule supervised assessment sessions. Task 1 Activity 1 is timetabled by Pearson.

Task 1 is an extended 'Design and Make' task that consists of nine substantive activities.

Task 2 is a Make to a specification task that consists of substantive activities.

These tasks are important to ensure students can demonstrate threshold competence and are able to evidence all the skills required by the Performance Outcomes.

Occupational Specialism Task 1 – Design and Make
Internally assessed, externally moderated project: 66 hours and 50 minutes **186 marks**
Performance Outcomes In this task students will: **PO1** – Analyse, interpret and respond to a creative proposition or a brief taking on board purpose and end user **PO2** – Refine and communicate ideas for creative product development **PO3** – Research and experiment with materials, tools, processes and techniques to determine suitability for product development/to realise the design **PO4** – Use selected materials and apply appropriate processes, tools and techniques, to realise ideas and refine the brief **PO5** – Review and evaluate the design process and product against the original brief and proposition.
Assessment overview Task 1 is made up of nine substantive activities. • Activity 1: Interpret the brief and conduct research • Activity 2: Jewellery ideas and experimentation with 2D/3D jewellery materials, techniques and processes • Activity 3: Presentation, feedback and refinement of ideas • Activity 4: Pitch preparation • Activity 5: Pitch presentation • Activity 6: Final design testing phase • Activity 7: Produce final technical drawings, final costings and final production schedule • Activity 8: Make final jewellery piece • Activity 9: Evaluation Students respond to a given scenario to complete task 1. They are assessed on their application of the skills listed for the Performance Outcomes.

Students are not assessed against specific 'knowledge' outcomes but are expected to draw on and apply related knowledge to ensure appropriate outcomes when applying the skills in response to an assessment scenario.

Students undertake the assessment under a combination of supervised and controlled conditions.

The task takes place over multiple sessions, up to a combined duration of 66 hours and 50 minutes.

The task outcomes consist of a physical item or items that have been designed and made, supported by a portfolio of evidence submitted electronically.

This task is set by Pearson and marked by the provider. Pearson will externally moderate the marks.

Occupational Specialism Task 2 – Make to a specification

Internally assessed, externally moderated project: 20 hours and 30 minutes

75 marks

Performance Outcomes

In task 2 students will:

PO4 – Use selected materials and apply appropriate processes, tools and techniques, to realise ideas and refine the brief

PO5 – Review and evaluate the design process and product against the original brief and proposition.

Assessment overview

Task 2 is made up of five substantive activities.

- Activity 1: Prepare metal, texture metal and make the ring band
- Activity 2: Prepare metal, make the bezel cup, solder the bezel cup to the ring and refine
- Activity 3: File, sand and polish the ring
- Activity 4: Setting the stone in the bezel, final polish and quality checks
- Activity 5: Evaluation

Some activities have sub-activities within them.

Students respond to a given scenario to include a technical specification to complete a technical making task or tasks. They are assessed on their application of the skills listed for the Performance Outcomes.

Students are not assessed against specific 'knowledge' outcomes but are expected to draw on and apply related knowledge to ensure appropriate outcomes when applying the skills in response to an assessment scenario.

Students undertake the Make to a specification task under a combination of supervised and controlled conditions.

The assessment takes place over multiple sessions, up to a combined duration of 20 hours and 30 minutes.

The Make to a specification task outcomes consist of physical objects that have been made to a set specification, supported by a portfolio of evidence submitted electronically.

This assessment is set by Pearson and marked by the provider. Pearson will externally moderate the marks.

Administration

Providers must follow the guidance in the following:

- General Administrative Support Guide
- Administration Support Guide for the specific Technical Qualification Occupational Specialism (if applicable)

These are located on the Training and Admin Support webpage.

Performance Outcome		Weighting	
		Raw marks	% of total marks
PO1	Analyse, interpret and respond to a creative proposition or a brief taking on board purpose and end user	38	15
PO2	Refine and communicate ideas for creative product development	33	12
PO3	Research and experiment with materials, tools, processes and techniques to determine suitability for product development/to realise the design	54	23
PO4	Use selected materials and apply appropriate processes, tools and techniques to realise ideas and refine the product.	109	42
PO5	Review and evaluate the design process and product against the original brief and proposition.	21	8

Resources for the delivery of Jewellery Maker

Providers are required to have the following resources to deliver this OS:

- IT suite with access to the internet, design software (for example, Canva, SketchUp, Blender CAD, Adobe Creative Cloud, PowerPoint, Photoshop/Illustrator, InDesign) and digital facilities, including image scanner
- online subscriptions (for example, Crafts, Jewellery focus, At the Bench, Bench Peg)
- relevant subject-specific books, journals
- teachers with qualifications and/or experience in the jewellery sector
- a curriculum team with experience and knowledge that span the breadth of the qualification content.

Assessment Task	Resource required
1 'Design and Make' task	• traditional drawing materials media (for example, paper, pencil, ink, paints, collage materials) • digital portfolio • photographic equipment • jewellery studio containing base metals, other materials, tools and equipment • computer, projection screen, presentation software (for example, PowerPoint, Prezi etc.) • pen/pencil and paper, in case you wish to write down notes • audio-visual recording equipment • clock/phone timer • calculator. Pearson-provided resources: • reference list template • experiment recording templates • health and safety recording template • peer feedback template • costings template • production plan timeline template • client feedback template • final testing materials record • contingency plan template • final design making record template • health and safety record • evaluation template. The specificity of material quantities will be released to providers prior to assessment.

Assessment Task	Resource required
2 Technical 'Make' task	• metal of different thicknesses • measuring equipment, marker pen, scribe • piercing saw • selection of files and emery paper • rolling mill • texture hammers • punches and texturising tools • ring triblet • raw hide or plastic hammer • silver solder in different hardness/solder paste • borax • pickle • soldering block • soldering torch • stones of different dimensions • files of different shape and fineness • wet and dry paper of different grades • polishing compounds • pendant motor • polishing wheel • barrel polisher • bezel roller • burnisher • ring clamp • Task 2 digital portfolio. Pearson-provided resources: • evaluation template. The specificity of material quantities will be released to providers prior to assessment.

Jewellery Maker Global resource list

- subject-specific books, magazines, journals and other print materials
- specialist hand tools (for example, measuring gauges, setting tools, files, vice, hammers and mallets, piercing saw, tweezers, steel bench block)
- power tools (for example, rotary, pendant, pillar drill)
- welders (for example, micro, pulse)
- mitre jig
- laser cutter
- microplating unit
- materials (for example, copper, brass, acrylic, plastics, resin, leather, semi-precious stones)
- adhesives (for example, two-part epoxy resin)
- varnishes (for example, renaissance wax)
- equipment to work hard surfaces (for example, burnishers)
- materials used to prepare items for polishing and finishing (for example, emery paper, polishing compounds, polishing accessories)
- materials used for etching (for example, press-n-peel paper, nitric acid, etching bath, bicarbonate soda)
- materials and equipment required for soldering (for example, micro torches, silver solder, flux, heat resists)
- equipment for cleaning (for example, pickle bath, ultrasonic cleaner tank, barrelbrite, barrel shot)
- equipment for holding and supporting work (for example, soldering, honeycomb, charcoal blocks, binding wire, ingot mould/holder, crucibles, third hand base)
- marking out tools to produce accurate measurements (for example, steel ruler, stencils, callipers, scriber)
- interpreting size and scale (for example, ring/bangle sizer)
- personal protective equipment (PPE) (for example, heavy duty face mask, gloves, safety goggles and boots).

3. Furniture Maker (Maker)

Performance Outcome 1: Analyse, interpret and respond to a creative proposition or a brief taking on board purpose and end user

What skills do students need to demonstrate?
FMS1.1 Clarify the purpose of the design brief through analysis: • determine the need for the product • identify the end user • establish where the product is going to be used • establish how the product is going to be used (E4, E5)
FMS1.2 Determine the parameters and expectations of a design brief to create an initial specification: • identify the appropriate target market • identify current industry trends • consider cultural and historical context • establish the budget available • establish the importance of each parameter in relation to the design brief • establish timescales (E4, E5)

FMS1.3 Explore design principles in response to the design brief:
• experiment with each design principle:
  ○ function
  ○ texture
  ○ size
  ○ shape and form
  ○ colour
  ○ proportion
• identify the importance and limitations of each design principle in relation to the design brief
• use a range of appropriate media to record ideas, providing supporting documentation in different formats
(D1, E2)

FMS1.4 Generate initial ideas in response to the design brief:

- evaluate initial ideas from experimentation with design principles, justifying suitability of choices in response to the design brief
- compare the initial ideas against the specification
- present a range of cost options
- use relevant digital devices and software safely and effectively

(D1, D5, M8, E4, M9)

What underpinning knowledge do students need?	

FMK1.1	**The considerations that need to be made when producing creative products:**
	• end user (for example, the person who uses or is intended to ultimately use a product)
	  ○ interaction between product and the end user (for example, ease of use, comfort, accessibility)
	• market:
	  ○ domestic users
	  – personality and taste of the potential user
	  – storage solutions (for example, cupboards, shelving, kitchen/bedroom/bathroom wall and floor units)
	  ○ commercial users:
	  – requirements of multiple users
	  – organisation's branding
	  – appropriate size of the product for a commercial setting
	  – factors limiting the choice of materials
	• consider level of production (for example, bespoke, custom, one off, batch, mass produced)
	• budget:
	  ○ available budget of client
	  ○ project costs (for example, materials, processes, premises, installation costs, time allocation, overheads)
	• intended location of the final product:
	  ○ interior or exterior
	• intended use of the final product:
	  ○ functional or decorative
	  ○ permanent or temporary
	  ○ frequency of use
	  ○ longevity of use
	• recyclability/potential for reuse
	• suitability of materials used
	• cultural and historical context:
	  ○ cultural:
	  – values and ideologies of markets
	  – impact of social identity on the design
	  – awareness of possible cultural sensitivities

	○ historical: – awareness of historical periods of furniture/art and design movements – specific materials, techniques and processes of the historical period/art and design movement.
FMK1.2	**Factors that influence the purpose of an item considering the balance between function and form:** • function: ○ practical (for example, storage, seating, providing a surface, providing comfort) • form: ○ decorative (for example, expresses a style, status symbol, focal point of setting, enhance a space) • fitness for purpose • quality.
FMK1.3	**Factors that affect the relationship between ergonomics and the end user in furniture:** • dimensions • weight of the product • interaction between end user and the furniture: ○ comfort ○ ease of use ○ reducing risk of injury • anthropometrics: ○ personal measurements to suit particular clients who do not fall within standard ergonomic tables.
FMK1.4	**Types of design principles and their impact on design development:** • function: ○ purpose and use of product ○ balance between functionality and inclusion of aesthetic features • texture: ○ smooth vs rough ○ quality of finish • size: ○ scale ○ weight ○ strength • shape and form: ○ creates different aesthetics ○ affects the functionality of a piece ○ suitability for its environment ○ influences the making process

	• colour:
	  o complements/enhances the setting
	  o client's taste
	• proportion:
	  o application of golden mean proportion ratio to achieve an aesthetic balance.

FMK1.5	**The differences between costing and pricing:**
	• costing:
	  o expenses incurred to produce a product/service:
	  – raw materials
	  – direct costs
	  – overheads
	• labour and machinery costs
	  o maintenance
	  o resources
	  o time
	  o production volumes
	• pricing:
	  o quotes
	  o estimates.

FMK1.6	**The factors to consider when costing a design brief:**
	• time to prepare and produce the proposal and the product:
	  o design requirements
	  o build quality
	  o labour and machinery costs
	• fabrication processes:
	  o handmade or machine produced
	  o suitability of materials used for fabrication
	  o complexity of the production process
	  o accuracy and type of finish required
	  o quantity required
	• cost of materials:
	  o procurement cost of the material
	  o fluctuating material prices
	  o availability of materials
	  o quality of materials used for the product
	• costing methodologies/models for different markets:
	  o economies of scale:
	  – small batch production
	  – mass/continuous production
	  o bespoke
	  o prototype or sample

	• routes to market:
	  o cost compared with financial return
	  o commission charges
	  o risks associated with the investment in sale or return (SoR) products
	  o whether a seller requires exclusivity
	• outsourcing of specialist processes:
	  o specialist skills or machinery not available in-house
	  o outsourcing paint, spray finishing processes
	• outsourcing fittings, fixtures and readymade components:
	  o impact on project timescales if specialists are experiencing high demand
	• market competition:
	  o competition analysis
	• level of expertise:
	  o rates relative to maker's experience.

Performance Outcome 2: Create designs to realise the brief

What skills do students need to demonstrate?
FMS2.1 Review initial ideas for further development, assessing their suitability for purpose: • compare each design against the specification • assess the suitability of the design for the purpose • assess the suitability of the design for quality • select design ideas for further development (GE4, GE5)
FMS2.2 Undertake research to inform the creative product in response to the design brief: • identify the appropriate research factors (for example, market and competitors, other designers) • identify appropriate research sources • select and apply the appropriate research methodologies, while using primary and secondary resources • interrogate data sources for information, understanding digital rights and responsibilities (DC1, DC3, DC5, E4, E5)
FMS2.3 Record findings from research using different media: • organise and record research findings and information logically using appropriate media (for example, mood board, mind map, digital presentation, sketchbook) • identify appropriate concepts and themes • summarise findings • maintain an accurate and ongoing record of sources and references (D3, E4, E5, M5)
FMS2.4 Present ideas informally to colleagues: • select an appropriate presentation tool or technique • organise ideas and information logically • use appropriate tone, tailoring language and technical information to the audience • record feedback in appropriate format (E2, E3, E4, E6)
FMS2.5 Refine ideas and selected medium in response to informal feedback: • assess feedback • identify if any amendments to the ideas are required • apply changes where appropriate, evaluating ideas against the specification (E4)

FMS2.6 Present ideas to client to check design against expectations:

- create medium for presentation, using appropriate non-digital and/or digital tools
- prepare materials for presentation, incorporating a range of information and media
- compare the ideas against initial design brief
- present a range of cost options and savings to support decision making
- ask and respond to questions for clarification

(D2, E1, E2, E3, E6, M9)

What underpinning knowledge do students need?	

FMK2.1	**The characteristics of qualitative and quantitative research to support development of the design brief:**
	• qualitative research – collection, analysis and interpretation of non-numerical information:
	  ○ gathers opinion and preferences
	  ○ asks open-ended questions
	  ○ requires small respondent size
	• quantitative research – collection, analysis and interpretation of numerical information:
	  ○ identifies patterns and trends
	  ○ makes predictions based on cause and effect
	  ○ forms conclusions about broader populations
	  ○ asks closed questions:
	  – requires large respondent size.

FMK2.2	**The differences between primary and secondary research sources:**
	• primary research:
	  ○ original data and information collected by researcher
	  ○ specific to requirements of research
	  ○ ownership of data and information
	• secondary research:
	  ○ use of existing data and information compiled by others
	• manufacturer's/supplier's specifications
	• unlikely to be specific to requirements of research.

FMK2.3	**Good practice for referencing research:**
	• use a standard reference of the source when:
	  ○ summarising an idea, concept or opinion
	  ○ quoting data, facts or information
	  ○ using images, visuals and other media
	• accurately record research sources:
	  ○ artist/author
	  ○ bibliographic reference (for example, title of publication)
	  ○ source (for example, location or uniform resource locator (URL)
	  ○ date (for example, year of publication).

FMK2.4	**The scope of research and its value to support the development of a design brief:**
	• the market, competitors and current trends:
	  o ideology of markets, market trends
	  o identifies competitors, designers and businesses
	  o gains insight into regional variances
	  o identifies different retail options for the product
	  o improves knowledge of current and new and emerging materials and production techniques
	  o provides inspiration
	  o avoids replication of existing ideas
	• cultural context:
	  o provides insight into values and ideology of movements.
	  o awareness of possible cultural sensitivities (for example, cultural appropriation, beliefs and values, customs, respect)
	• historical context:
	  o influence of art and design movements (for example, Art Deco, Bauhaus), artists, designers, practitioners and materials, processes and techniques
	  o supports understanding of associated design and production processes
	  o influence of political ideologies, conflicts, economics, living conditions, access to materials (local/imported), value of rarer materials and how this impacts on design/trends
	  o impact of social identity on a design
	• circular design concepts – approaches to the design and innovation of products to have a low impact on the environment and positive social purpose:
	  o increases awareness of the environmental impact of raw materials used and processes applied
	  o understanding supply chain and end of life of products
	  o identifies ethical sources for materials
	• sustainability of materials, processes:
	  o improves knowledge of current production methods including packaging
	  o understanding supply chain and end of life of products
	  o efficiency of materials, minimising waste, recycling or reusing materials in the creation of products
	  o understanding of potential cost implications.

FMK2.5	**Types of research sources and their value to support the development of a design brief:**
	• museums, exhibitions and galleries:
	  o enables first-hand experience of viewing products
	  o provides an opportunity to meet curators, professionals and experts
	• physical stores – high street and independent:
	  o enables first-hand experience of viewing products
	  o provides opportunities to handle products

	• online stores:
	  ○ offers wide ranging and variety of examples to identify trends and styles
	• books, magazines, catalogues and online journals and blogs:
	  ○ easily accessible
	  ○ provides opportunities to study other works
	  ○ identifies trends and styles
	  ○ provides insight into technologies, processes and techniques
	• digital/online sources:
	  ○ vast range, also covers new and emerging technologies
	  ○ social media enables interaction with makers
	  ○ up to date with trends
	• workshop visits:
	  ○ provides opportunities to meet designers, practitioners and experts
	  ○ provides insight into processes and techniques
	• observations and insights gained from experience:
	  ○ draws information from unexpected sources, previous projects and customer satisfaction feedback
	• commercially available market analysis reports:
	  ○ breadth of market information
	• surroundings
	• design inspiration (for example, colours, textures and pattern).

FMK2.6	**The advantages and limitations of different routes to market:**
	Understand where products fit in the market before targeting where to sell or market work:
	• exhibitions and trade shows:
	  ○ advantages:
	  – exposure to larger retailers
	  – networking opportunities
	  – engagement with customers
	  – presence of direct competitors
	  ○ limitations:
	  – costs to hire exhibition space or stand
	  – cost of marketing materials
	  – direct exposure to competitors
	  – logistical issues
	  – extended time away from workshop
	• direct to customer:
	  ○ advantages:
	  – control over branding and presentation
	  – no commission costs
	  – increased exposure
	  – personal interaction with customers
	  – high footfall – dependent on location

	– greater control over customer engagement – greater control over pricing – simplified onward supply chain o limitations: – customer reach can be limited by store location and opening hours – need to identify own customers – deliver products in certain timeframe • retail – selling to retailers: o advantages: – high visibility for the product – boost own brand recognition – potential to build high volume sales o limitations: – operates on a small profit margin – reliance on small number of customers to increase market share – restricts selling similar products at a reduced price • wholesale: o advantages: – sell products in large volume – risk of selling is absorbed by wholesaler o limitations: – profit per item may be lower – no opportunity to build relationship with end user • sales agents: o advantages: – market knowledge – experience and contacts provide sales opportunities o limitations: – relationship management with distributor – commissions can change affecting profit margins.
FMK2.7	**The purpose of the following tools and techniques employed in the development and presentation of concept:** • mood board – visual collage to organise and communicate concepts and ideas: o physical – collection of real-world items o digital software – curate and display digital items • concept map – graphical technique for structuring qualitative research data: o physical – hand-drawn/written diagrams o digital software – create, share and interact across digital media • 2D representation – informal and quick technique to capture initial concepts: o sketch book o digital drawing

	• 3D representation – formal and precise technique to capture refined ideas:
	  o computer-aided design (CAD)
	  o maquette/model.

FMK2.8	**The differences between formal and informal communication methods:**
	• formal (for example, presentation to client):
	  o detailed and structured
	  o recorded and documented
	• informal (for example, discussion, peer review):
	  o free flowing and spontaneous
	  o no formalities
	  o not recorded.

FMK2.9	**Advantages and limitations of different ways to communicate ideas:**
	• presentations:
	  o advantages:
	  – allows interaction with the audience
	  – can be physical or virtual
	  – allows observation of reactions and non-verbal cues
	  – provides opportunities to ask audience questions and gain feedback
	  o limitations:
	  – time constraints
	  – availability of clients or resources
	• discussion (for example, in person, virtual or telephone):
	  o advantages:
	  – builds client relationships
	  – sets early expectations
	  – opens discussion on ideas and outcomes
	  o limitations:
	  – time spent may not be recouped
	• visual communication
	  o advantages:
	  – extends visual/sensory understanding of designs/materials
	  – accurate representation of colour and/or texture
	  o limitations:
	  – preparing samples can be time consuming
	  – final products may not look exactly the same as the sample
	• electronic communication:
	  o advantages:
	  – can be informal and formal
	  – faster response times
	  – can provide interactive content
	  – ease of duplication of information
	  – ease of communication worldwide
	  – ecological as it removes need to travel to visit clients

	○ limitations: – messages can be lost when in high volumes, moved into spam/junk or not sent – potential ambiguity due to interpretation of content – perception of design can be different between sender and receiver.
FMK2.10	**The purpose of using furniture drawings and specifications:** • communicates ideas between the maker and client • helps the maker develop and refine ideas • co-ordinates and schedules processes and resources • identifies proportions and constructional details.
FMK2.11	**The differences between drawing techniques used to present design ideas:** • preliminary sketches: ○ provides basic outline of an initial idea or concept before elaborating further ○ supports the understanding and interpretation of the initial design brief between the client and maker ○ helps to visualise initial ideas • orthographic 2D and 3D projection: ○ provides detailed technical information to help plan production ○ drawing to industry standards using scale and formal BSI conventions ○ use of industry-standard third-angle projection, isometric views and perspective • assembly/exploded drawings: ○ details the interrelationship between different parts of the design and how components are connected together • component layout diagram: ○ identifies correct positioning of materials ○ lay planning supports correct positioning and orientation of component placement on sheet material ○ supports pattern matching • isometric drawing: ○ provides three different views of the object projected at 30º angles • presentation drawing: ○ provides an accurate representation of the design ○ includes surface details ○ may contain less technical information.
FMK2.12	**The purpose and features of specifications:** • purpose: ○ to convey necessary information, which may not be identified by the drawings alone • features: ○ units ○ dimensions

	○ joining methods ○ acceptable tolerances ○ gauges ○ materials ○ scale.
FMK2.13	**The application of technical language used in drawings and specifications and pattern templates:** • views (for example, plan; elevation; section; perspective; scale; technical conventions and standard symbols right angle; angle; radius; circumference; diameter; hidden detail lines; visible line; centre line; dimension line) • labels: ○ name parts using industry-standard terms ○ use of datum surfaces • annotation: ○ surface finishes ○ joining techniques.
FMK2.14	**The potential capabilities and limitations of existing and emerging design and drawing technologies:** • digital design programs: ○ potential capabilities: – enables accurate and editable designs – provides calculations – tests designs under different conditions prior to manufacture – facilitates sharing and communication of ideas – creates interactive animations and drawings ○ potential limitations: – ongoing maintenance – training of staff to use the equipment • 3D scanning: ○ potential capabilities: – allows for reverse engineering – ability to capture the exact size and shape of a physical object accurately and efficiently – quicker and cheaper than traditional measurement techniques ○ potential limitations: – cost considerations compared with quality of output – costs of updates • augmented reality (AR) and virtual reality (VR): ○ potential capabilities: – ability to present designs remotely – visualise in the end-user's setting ○ potential limitations: – cost of purchase – availability of equipment.

FMK2.15	**The potential capabilities and limitations of existing and emerging production technologies:**
	• computer numerical control (CNC) (for example, miller, router or lathe):
	  ○ potential capabilities:
	  – reduces the reliance on manual production techniques
	  – reduces human error
	  – reduces workforce costs and increases output
	  ○ potential limitations:
	  – cost of tooling and set-up
	  – design programming capability
	• computer-aided manufacturing (CAM):
	  ○ potential capabilities:
	  – improves precision
	  – reduces waste
	  – accessible technology
	  – cost effective and accurate way to produce a prototype product compared with a handmade item
	  ○ potential limitations:
	  – higher energy costs
	  – initial set-up costs may be high
	• smart materials (for example, thermochromic, photochromic or shape memory polymer)
	  ○ potential capabilities:
	  – enhances the experience for the end user
	  – increases the durability of materials (for example, non-corrosive materials)
	  – increases lifespan of products
	  ○ potential limitations:
	  – cost of materials
	  – limited access to expertise
	  – environmental impact of the materials is unknown.

Performance Outcome 3: Research and evaluate materials, processes, tools and techniques to determine suitability to realise the design

What skills do students need to demonstrate?
FMS3.1 Experiment with materials to realise the objectives of the design brief: • explore the material characteristics • work safely and effectively • consider the aesthetic appeal of the material • assess the material's ability to meet the design brief • identify the limitations of the material • use a range of media to accurately record research • use technical language in all documentation (E3, E4)
FMS3.2 Experiment with finishes to realise the objectives of the design brief: • explore the effects of different finishes on a material (for example, decorative technique applied to material or fabric) • work safely and effectively • assess the finish's ability to meet the design brief • identify the limitations of the finish • use a range of media to accurately record research • use technical language in all documentation (E4, E5)

FMS3.3 Experiment with chemical processes to realise the objectives of the design brief:
• evaluate the effects of chemicals on surface details of different materials
• work safely and effectively:
  ○ comply with relevant health and safety legislation and regulations
  ○ use appropriate Personal Protection Equipment (PPE)
• assess the chemical process's ability to meet the design brief
• identify the limitations of the chemical process
• use a range of media to accurately record research
• use technical language in all documentation
(E4, E5)

FMS3.4 Research and evaluate different materials, finishes and chemical processes:

- undertake research of different materials, finishes and chemical processes to determine suitability for use
- evaluate the impact of different materials, finishes and chemical processes, considering:
  - cost
  - availability
  - affordability
  - sources and suppliers of raw materials
  - environmental impact.
- interrogate data sources, accurately record research, organise ideas and information logically.
- use technical language correctly in all documentation, using graphics and other tools to aid understanding

(D2, D3, E1, E2, M8, M9)

FMS3.5 Select appropriate materials for bespoke furniture designs to be produced:

- review records of research
- evaluate against the design brief and specification
- draw conclusions
- create a shortlist of appropriate materials for presentation to the client

(E3, E5)

FMS3.6 Use hand and machine tools safely to experiment with materials:

- select appropriate tools for the task
- select materials for use:
  - make reasonable approximations of material required
  - accurately measure materials prior to using tools.
- apply or use the tools correctly and safely:
  - wear appropriate Personal Protection Equipment (PPE)
  - comply with workshop guidelines
  - use according to manufacturers' instructions
  - apply good practice when using tools maintaining them as necessary in use
  - ensure that blades and cutting bits are sharp and fit for purpose
  - turn off machinery and isolate on completion
  - clean, return and store appropriately after use

(M1, M2, M3)

FMS3.7 Identify any problems and issues and work to resolve them.

FMS3.8 Reassess the design against the design brief:

- re-evaluate the design against the original brief and specification.
- amend or adapt design concepts, following research findings or informal discussions:
  - incorporate a range of information and media.
- create a summary of any proposed changes to the design for presentation to the client

(D2, D4, E3)

FMS3.9 Finalise and formally pitch design:

- prepare material for presentation
- select appropriate presentation format (for example, presentation software plus samples)
- use industry-standard terminology
- present/pitch to client:
  - explain decision-making process and justify selection of choices.
  - invite feedback.
- record and document feedback.
- adjust design accordingly

(E1, E2, E3, E4, E6)

FMS3.10 Maintain accurate records:

- produce a record of ongoing information regarding the progress and outcomes of testing and research
- produce 3D models to aid possible construction

What underpinning knowledge do students need?	

FMK3.1	**Factors to consider when calculating the finished dimensions of the product:**
	• size:
	  ○ material constraints
	  ○ suitability for final location
	  ○ installation considerations
	• scale:
	  ○ choice of material
	  ○ proportion
	• dimensions
	  ○ suitability for final location
	  ○ awareness of environment limitations
	  ○ ergonomics and anthropometric data
	• weight:
	  ○ transportation
	  ○ intended location
	  ○ mobility.

FMK3.2	**The purpose and application of health and safety legislation and regulations in the context of furniture:**
	• The Control of Substances Hazardous to Health Regulations 2002:
	  ○ purpose:
	  – requires employers to control substances hazardous to health by reducing or preventing employees' exposure to these substances

	○ application: – using data sheets to identify potential hazards and understand the requirements for safe practice – using appropriate control methods – using personal protective equipment (PPE) where stipulated and provided • The Provision and Use of Work Equipment Regulations 1998: ○ purpose: – defines employers' responsibilities to provide appropriate equipment for use at work is suitable for its intended use ○ application: – ensuring tools and electrical equipment are maintained and repaired appropriately – keeping records of maintenance of tools and equipment – ensuring compliance with industry safety standards • Health and Safety at Work etc. Act 1974: ○ purpose: – defines employers' responsibilities to protect the health, safety and welfare of employees at work and members of the public, and defines employees' responsibilities to take reasonable care of themselves and other people who may be affected by their actions or omissions ○ application: – undertaking risk assessments to identify hazards – ensuring only adequately trained employees use equipment – providing a safe working environment that is properly maintained • The Personal Protective Equipment at Work (Amendment) Regulations 2022: ○ purpose: – defines employers' responsibilities to provide appropriate Personal Protection Equipment (PPE) to reduce harm to employees, visitors and clients ○ application: – supplying appropriate Personal Protection Equipment (PPE) to employees – ensuring workers have sufficient information, instruction and training on the use of PPE – selecting equipment and PPE suitable to the task – ensuring the PPE is used correctly by employees – maintaining and storing PPE correctly and reporting damaged or worn PPE • The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013: ○ purpose: – defines employers' duties to report serious workplace accidents, occupational diseases and specified dangerous occurrences ○ application: – maintaining an accident book

	– recording incidents and near misses – reviewing accidents and identify trends • The Manual Handling Operations Regulations 1992: o purpose: – requires employers to assess and minimise the risk to employees' health involved in the manual handling, moving and positioning of an object, person or animal and workplace ergonomics o application: – following correct guidance and training – taking reasonable care over own and others' health and safety • The Control of Noise at Work Regulations 2005: o purpose: – requires employers to assess and minimise the risk to employees from excess noise while using machinery in the work place • The Work at Height Regulations 2005: o purpose: – requires employers to provide suitable access and work platforms for employees when working at height • The Electricity at Work Regulations 2019: o purpose: – requires employer to ensure that all electrical equipment is regularly maintained and is safe to use • Work in Compressed Air Regulations SI1966/1656: o purpose: – requires employers to ensure that all compressed air equipment is regularly maintained and is safe to use.
FMK3.3	**The purpose of a risk assessment in a furniture making context:** • to identify and reduce risk by: o identifying potential risks o determining likelihood of risk occurring o evaluating the potential impact of risks and required control measures o recording findings and implementing them, including completing risk assessment documentation o regularly reviewing and updating risk assessment.
FMK3.4	**Characteristics, process, applications and limitations of materials used in furniture making:** • metals, their properties and characteristics: steel, stainless steel, copper, brass and aluminium: o material characteristics (for example, durability, strength) o processes (for example, casting, welding, sheet metal fabrication, shearing) o machining processes (for example, turning and milling) o applications (for example, producing hardware, providing structure) o limitations (for example, differing resistance to corrosion, requirement for specialised tools and equipment, processability) o understand the relative cost of metals

	• manufactured composite materials, their properties and characteristics including plywood, medium-density fibreboard (MDF) and melamine faced chipboard (MFC) laminboard, blockboard: o material characteristics (for example, manufactured in large, standardised formats and thicknesses, versatile applications, ready to use) o processes (for example, easily cut and shaped, can be veneered, computer numerical control (CNC)) o applications (for example, providing relatively stable substrate) o limitations (for example, prone to delamination-wood, susceptible to water damage unless more expensive sheets are used) o understand the relative cost of man-made composite materials • veneers: o material characteristics (for example, flexible prior to application, available in a wide range of colours, textures and grain patterns) o processes (for example, cold pressing, heated pressing, laminating) o applications (for example, producing plywood, inlaying and marquetry, matching, creating a curved component) o limitations (for example, delicate prior to application, may require jigs and fixtures to hold in place while adhesive cures, less durable than solid wood) o understand the relative cost of veneers • plastic laminates (for example, Formica, melamine): o material characteristics (for example, usually has a cheaper man-made core with a more expensive exterior, available in a wide range of colours, textures and grain patterns) o processes (for example, vacuum pressing, manual pressing using clamps and cauls, jig-sawing, routing) o applications (for example, producing tabletops and work surfaces, often used for larger scale production) o limitations (for example, may require jigs and fixtures to hold in place while adhesive cures, difficult to recycle, potentially hazardous to work with, brittle, not easily repaired) o understand the relative cost of plastic laminates • glass: o material characteristics (for example, transparency, opacity, solid, highly corrosion resistant) o processes (for example, blowing, sand blasting, kiln casting, flame working) o applications (for example, incorporation as shelving for enhanced light, display panels or cabinets, providing a flat surface, providing a decorative surface) o limitations (for example, brittle, may require specialised tools and equipment, heavy, fragile to transport) o understand the relative cost of glass

	• plastics:
	  ○ material characteristics (for example, readily available, versatile, lightweight, mouldable, waterproof)
	  ○ processes (for example, blow moulding, vacuum forming, injection moulding, rotational moulding)
	  ○ applications (for example, producing outdoor products, making knock down fittings and components, providing an alternative to glass)
	  ○ limitations (for example, processing costs, discolouration in natural light, can be affected by heat, non-biodegradable)
	  ○ understand the relative cost of plastics
	• hardwoods and softwoods:
	  ○ material characteristics (for example, natural characteristics – colour, surface figuring, strength; will require processing before using in furniture making; will require conversion and seasoning before using in furniture making; living material)
	  ○ processes (for example, cutting, turning, milling, laminating, steam bending, jointing, carving, staining)
	  ○ applications (for example, providing load bearing strength, providing decoration on an item, providing structure)
	  ○ limitations (for example, can warp and twist, need to consider colour and grain variation when selecting, may have both natural defects and drying defects)
	  ○ understand the relative cost of hardwoods and softwoods
	• alternative materials may need to be sourced due to Forest Stewardship Council (FSC) regulations
	• casting materials (for example, plaster, silicone and rubber):
	  ○ material characteristics (for example, malleable, cost effective repeatable process)
	  ○ processes (for example, mould making, casting, centrifugal casting)
	  ○ applications (for example, making decorative moulds, producing finials, producing handles)
	  ○ limitations (for example, cold casting can be less durable, more susceptible to environmental conditions, not easily recycled)
	  ○ understand the relative cost of casting materials
	• recycled materials:
	  ○ material characteristics (for example, inexpensive, sustainable)
	  ○ processes (for example, upcycling, process depends upon material used)
	  ○ applications (for example, constructing furniture, providing components)
	  ○ limitations (for example, unpredictable in terms of quality and lifespan as wear and tear may limit viability of the material or require repair, indiscriminate sizes, metal fixings may be present in recycled materials)
	  ○ understand cost of recycled materials

	• biomaterials (for example, cork, seagrass, mycelium, coir, bio-resin, cane, rattan): o material characteristics (for example, organic; renewable; biodegradable) o processes (for example, rubberising; moulding; specialist weaving) o applications (for example, providing an alternative to synthetic material; making furniture components) o limitations (for example, processed biomaterials are relatively untested; more expensive if a new material) • advanced materials (for example, smart memory polymers, 3D shift pigments, photochromic or thermochromic): o material characteristics (reversible and repeatable change according to environment; interacts with the user) o processes (for example, spraying; painting) o applications (for example, providing decorative finishes; making products interactive) o limitations (for example, expensive to buy and maintain; not readily available) • casting materials (for example, plaster, silicone and rubber): o material characteristic (for example, malleable; cost effective repeatable process) o processes (for example, mould making; casting; centrifugal casting) o applications (for example, making decorative moulds; producing finials; making furniture legs o limitations (for example, cold casting can be less durable; more susceptible to environmental conditions; not easily recycled) • resins: o material characteristics (for example, may be hardwearing; versatile; relatively inexpensive) o processes (for example, casting; mixing of different materials) o applications (for example, offering an alternative to glass or wood filler; providing decorative finishes; copying an original) o limitations (for example, potentially hazardous to work with; not easily recycled; single use).
FMK3.5	**The characteristics and use of different fixtures, fittings and materials:** • characteristics and use of different fixtures and fittings and the materials they are made from • fittings including: o brackets: – characteristics (for example, commonly made from metal, removable and repositionable) – uses (for example, supporting shelving and in furniture frames, joint fixing)

	○ hinges and stays: – characteristics (for example, can be used with wood, plastic, glass or metal, available in standard sizes) – uses (for example, adds versatility to the design, creates movement between two components) ○ nuts and bolts: – characteristics (for example, can be used with wood, plastic, glass or metal, available in standard sizes) – uses (for example, primarily used for connecting components, can add a decorative element to a piece, add strength to the connected components) ○ springs: – characteristics (for example, available in different types – compression and tension springs, usually made from sprung steel, can be used with wood, plastic, glass or metal, available in standard sizes) – uses (for example, used to create movement in a piece) ○ locks, catches and latches (for example, magnets, hook and latch, push-to-open mechanism): – characteristics (for example, can be used with wood, plastic or metal) – uses (for example, keep two components together, add increased privacy or security) ○ runners: – characteristics (for example, can be used with wood, plastic or metal) – uses (for example, adds versatility to the design, improve end-user experience) ○ handles, knobs and gripping devices: – characteristics (for example, available in many different styles, colours and materials, can be permanent, temporary or interchangeable, can be used with wood, plastic, glass or metal) – uses (for example, improve end-user experience, add decorative value) ○ knock down fittings: – characteristics (for example, range of mechanical fittings – connector nuts and bolts, screw fittings, cross dowels, shelf support pins) – uses (for example, used to assemble a product using a range of basic tools, can be used for temporary and permanent joints, commonly used in flat pack furniture).
FMK3.6	**The application of furniture-making processes and techniques:** • wasting: ○ planing ○ sawing ○ chiseling ○ rasping/filing ○ drilling ○ routing.

	○ turning ○ joining • traditional joinery: ○ butt ○ halving ○ bridle ○ mortice and tenon ○ dovetail ○ housing ○ dowel ○ biscuit • knock down joinery: ○ veneering ○ machine cutting ○ sawing ○ moulding ○ CNC cutting ○ turning ○ planing ○ tenoning ○ dovetailing ○ pocket screwing • carving: ○ planing ○ spoke shaving ○ whittling ○ cabinet scraping ○ turning • gluing: ○ heat ○ chemical ○ hot melt ○ contact adhesion ○ epoxy adhesive • preparing frames: ○ stabilising and repairing ○ stripping and/or sanding ○ reviving or repolishing ○ waxing • welding: ○ soldering ○ brazing ○ stick welding

	○ metal inert gas (MIG) welding ○ tungsten inert gas (TIG) welding ○ plastic welding ○ gas welding • shaping (bending): ○ thermoforming ○ blacksmithing ○ beating ○ rolling • steaming: ○ box steaming ○ ironing ○ bag steaming • laminating: ○ vacuum or bag press ○ clamped ○ wing press ○ stereolithography/3D printing • moulding: ○ compression ○ injection ○ extrusion ○ blow ○ rotational ○ vacuum forming.
FMK3.7	**The purpose of different finishing preparation methods:** • sanding: ○ purpose (for example, flattens the surface, removes fine dust particles, provides a key for the adhesion of the finish, removes tool marks, brightens or dulls the surface finish) • distressing: ○ purpose (for example, adds age or character to a piece (for example, in keeping with historical context, reduces transparency of glass or clear plastic, alters surface finish) • burnish: ○ purpose (for example, adds shine or lustre to a surface, smooths a carved wooden surface) • degreasing: ○ purpose (for example, removes contaminants or imperfections from a surface prior to applying the finish, removes fine dust particles).

FMK3.8	**The application and limitations of different finishes:**
	Uses and limitations of finishes that are suitable for use with hard and soft woods.
	• varnish:
	  ○ application (for example, provides internal and external finishes to a product, primarily used on outdoor harder wearing surfaces, provide a protective coating while revealing the original substrate, tinting or colouring varnish)
	  ○ limitations (for example, needs to be applied in thin coats, discolours over time, can be hazardous to work with)
	• lacquer:
	  ○ application (for example, provides a hardwearing finish on a surface, used on wood or metal, primarily used for indoor furniture)
	  ○ limitations (for example, harder to repair than more traditional finishes, can be hazardous to work with, specialist equipment and extraction required)
	• sealers and primers:
	  ○ application (for example, minimising quantity of topcoat required as a preparatory layer, preventing natural oils and resins seeping through)
	  ○ limitations (for example, adds extra time to the finishing process, not suitable as a hardwearing final finish, can be hazardous to work with)
	• waxes:
	  ○ application/use (for example, providing a protective barrier, hard waxes are used for filling defects on the material's surface, reviving old furniture, providing a natural looking finish, inhibiting oxidisation)
	  ○ limitations (for example, can be difficult to remove from intricate detail, not hardwearing, requires occasional maintenance and reapplication, ineffective as a single finish)
	• oils:
	  ○ application/use (for example, enhancing the grain of hardwoods, offering ultraviolet (UV) protection, providing outdoor protection)
	  ○ limitations (for example, less hardwearing than lacquer, requires occasional maintenance and reapplication, requires reasonable ventilation, requires multiple coats to achieve a good finish)
	• shellac polish/French polish:
	  ○ application/use (for example, acting as a sealer and as a final finish, achieving a high-quality sheen)
	  ○ limitations (for example, requires technical expertise to create a high-quality French polish finish, time consuming, requires specialist tools)
	• undercoat paint:
	  ○ application/use (for example, cover small imperfections in the surface; ensure even coverage of the topcoat; moisture-proof the substrate)
	  ○ limitations (for example, often needs to be used with other finishes)

	• topcoat paint:
	  ○ application/use (for example, providing colour and decorative patterns to a final product; providing protection from corrosion, hiding repairs or unsightly features)
	  ○ limitations (for example, durability depends upon the type of paint used and the quality of the application; time consuming to remove; can crack or fade over time)
	• gilding:
	  ○ application/use (for example, creating a fine metal finish, creating an aesthetically pleasing finish)
	  ○ limitations (for example, materials may be expensive, difficult to apply)
	• stains and dyes:
	  ○ application/use (for example, changing the colour of the final surface, adding colour whilst retaining original patina; imitating more expensive timber)
	  ○ limitations (for example, hard to remove as it is soaked into the material, poor colour fastness, staining does not provide a durable finish).

FMK3.9	**The application chemicals for altering surface details of materials:**
	• ammonia fuming:
	  ○ uses (for example, darkening the wood grain)
	  ○ limitations (for example, can be hazardous to work with)
	• oxidising using chemical solutions:
	  ○ uses (for example, can permanently darken the wood grain)
	  ○ limitations (for example, can be hazardous to work with)
	• bleaching:
	  ○ uses (for example, removing stains or wood colour; lightening the colour of the wood
	  ○ limitations (for example, can be hazardous to work with)
	• liming/lime washing:
	  ○ uses (for example, enhance the overall appearance of the wood, while still highlighting the grain pattern)
	  ○ limitations (for example, limited waterproofing, can be time consuming)
	• paint stripper (dichloromethane) and soda blasting:
	  ○ uses (for example, removing old paints and varnishes to return material to its original state)
	  ○ limitations (for example, can be hazardous to work with).

FMK3.10	**The application and safe and effective use of measuring and marking tools:** • tape measure: ○ safe application (for example, measuring length up to approximately 8m; check for damage in the metal; retract slowly; keep away from moving power tools or machinery)

	• set square (for example, right angle, adjustable or try-square):
	  ○ safe application (for example, drawing or marking out perpendicular lines on materials; drawing and marking out 90º, 60º, 45º, 30º accurately; keep clean and rust free; use according to manufacturers' instructions)
	• sliding bevel:
	  ○ safe application (for example, duplicating and transferring an atypical angle; drawing and marking out atypical angles; holds the bevel and workpiece correctly and securely to ensure accuracy; keep clean and rust free)
	• callipers:
	  ○ safe application (for example, checking the thickness, depth or width of a material or aperture, in mm and inches; transferring measurement; ensure material is clean prior to measurement; ensure callipers are at zero)
	• marking gauge, mortice gauge, cutting gauge:
	  ○ safe application (for example, scoring or drawing a precise line in preparation for cutting, usually parallel to an edge; make sure the material to be marked is adequately gripped; store safely when not in use to avoid damage; take appropriate care with spur or knife edge)
	• steel rule:
	  ○ safe application (for example, providing a more precise measurement than a tape measure; drawing a straight line over a curved surface; grip the workpiece adequately before using rule; ensure the rule is laid flat on the workpiece)
	• straight edge:
	  ○ safe application (for example, checking the flatness of a surface; hold firmly when using equipment; grip the workpiece adequately; keep away from heat, electrical sources and moving machinery or tools)
	• spirit level:
	  ○ safe application (for example, checking whether a surface is level; grip the workpiece adequately; keep clean and rust free; check for accuracy regularly)
	• laser measure:
	  ○ safe application (for example, measuring volume, length and distance; measuring hard to reach places; use according to manufacturers' instructions; do not use where user or others could look at the laser beam to prevent eye injury)
	• marking knife/scriber:
	  ○ safe application (for example, marking fine lines on metal or plastic surfaces before cutting and machining; accessing difficult to reach parts of a workpiece; if using a template, clamp to workpiece to prevent movement; after use, brush clean of any dirt).

FMK3.11	**The application and safe and effective use of hand cutting tools:**
	• plane:
	  ○ safe application (for example, flattening wooden surfaces; grip the material adequately; pay attention to the sharp blade)
	• saw (for example, tenon, coping, hack and piercing):
	  ○ safe application (for example, producing a finer kerf compared to a machine saw; cutting smaller pieces of material; making smaller cuts over a shorter distance; wear appropriate Personal Protection Equipment (PPE); keep fingers away from the blade when cutting; use appropriate size saw for the task)
	• chisel:
	  ○ safe application (for example, shaping and carving materials; wear appropriate Personal Protection Equipment (PPE); never chip towards the face; keep hands behind edge)
	• scissors or shears:
	  ○ safe application (for example, cutting material accurately and easily; follow manufacturers' instructions; ensure the material is secured to prevent movement whilst cutting and to maintain accuracy; regularly sharpen blades).

FMK3.12	**The application and safe and effective use of the following striking tools:**
	• hammers – cross pein hammer, pin/pattern, claw:
	  ○ safe application (for example, driving nails into material; pounding or marking material; inserting or extracting fixing; grip handle securely)
	• nail punch:
	  ○ safe application (for example, driving nail below a surface to create a smooth finished look; marking material prior to drilling; wear appropriate Personal Protection Equipment (PPE); ensure punch is in good working order)
	• mallet:
	  ○ safe application (for example, driving chisel into material; providing softer impact on the striking material than a metal hammer; grip the mallet close to the head of the tool; when using, strike away from the body)
	• press:
	  ○ safe application (for example, fastening fittings or fixings to another material; wear appropriate PPE; keep hands away from striking edge).

FMK3.13	**The application and safe and effective use of the following holding tools:**
	• clamp (for example, G clamp, sash clamp, band clamp):
	  ○ application (for example, holding material securely; providing pressure during the gluing process)
	  ○ safe and effective use (for example, use appropriately sized clamp for the task)

	• vice (for example, bench vice, machine vice, engineer's vice, carvers' chops):
	  ○ application (for example, holding material securely whilst drilling and processing materials)
	  ○ safe and effective use (for example, be aware of surroundings and keep fingers clear of the vice)
	• pliers (for example, long nose, groove lock):
	  ○ application (for example, gripping, pulling, twisting or cutting materials)
	  ○ safe and effective use (for example, use appropriate pliers for the task; wear appropriate PPE whilst cutting or pulling; pull away from the body).

FMK3.14	**The application and safe and effective use of the following machine tools:**
	• circular saw, chop saw, radial arm saw, dimension saw:
	  ○ application (for example, cutting straight lines in material; cutting materials of different thicknesses; cutting wood, metal and plastic, dependent on the type of blade)
	  ○ effective use (for example, ensure the path of the blade is kept clear; secure the cutting fence prior to use; use correct saw blade for the material or task)
	• table saw:
	  ○ application (for example, dimensioning sheet material; ripping; creating angled cuts by changing the blade angle; making long cuts)
	  ○ effective use (for example, ensure riving knife is in place; ensure there is adequate clearance from the ripping fence when cross cutting; use pushing sticks or power feed to push workpiece across the cutter; wait for the blade to stop before removing any offcuts from the table; isolate the machine before changing blades)
	• drill/driver:
	  ○ application (for example, drilling round holes in material; driving in or removing a screw or bolt)
	  ○ effective use (for example, use correct drill bit for the material being drilled; ensure the drill bit is sharp)
	• jigsaw:
	  ○ application (for example, cutting material in a variety of ways; cutting wood, metal and plastic)
	  ○ effective use (for example, use the correct blade for the material being cut, the finish required and the shape of the cut)
	• fixed and portable sanders (for example, orbital, detail, belt):
	  ○ application (for example, removing material and providing a smooth finish; polishing and cleaning a surface; roughening a surface in preparation for a finish)
	  ○ effective use (for example, ensure adequate ventilation)
	• hand-held router:
	  ○ application (for example, creating different edge profiles; cutting grooves or rebates
	  ○ creating flush trim edges; creating curved work)

	○ effective use (for example, ensure the router cutting bit is sharp; cut against the direction of the rotation of the router cutting bit) • mitre saw: ○ application (for example, cross cutting at variety of angles; creating trench cuts to assist in the creation of other joints) ○ effective use (for example, wait for the blade to stop before removing waste; use dust extraction where appropriate) • overhand planer and thicknesser: ○ application (for example, flattening surfaces or edges of wood; creating a square or datum edge; providing more accuracy than an electric hand planer; used with jigs to create shaped components) ○ effective use (for example, ensure blade is well maintained and sharp) • pillar/pedestal drill, dowelling drill: ○ application (for example, drilling accurate and primarily perpendicular holes; enabling drilling at angles; sanding or countersinking for plug making and other specialist uses by fitting different attachments) ○ effective use (for example, keep fingers away from moving drill bit; take caution with hot drill bits when operation is complete) • router table: ○ application (for example, increasing the versatility of a handheld router) ○ effective use (for example, cut against the direction of rotation of the router cutting bit; use push sticks or feather boards to move workpiece across the cutter; always pass the workpiece across the front of the cutter, never between the cutter and the fence) • spindle moulder: ○ application (for example, creating large mouldings and rebates, particularly for joinery; creating curved components for furniture using a ring fence) ○ effective use (for example, cut against the direction of rotation of the blade; make sure blade is at full speed before cutting; use pushing sticks or power feed to push workpiece across the cutter; always pass the workpiece across the front of the cutter, never between the cutter and the fence) • compressor: ○ application (for example, operating pneumatic staples, nail gun, drill; paint and varnish spraying) ○ effective use (for example, empty after use to avoid corrosion) • safe use of all machine tools (for example, always follow manufacturers' instructions; adhere to workshop safe working practice policies and procedures, wear appropriate Personal Protection Equipment (PPE), ensure the machine guards are in place prior to use; clamp materials securely; use efficient dust extraction when required).

FMK3.15	**The application and safe and effective use of the following gripping tools:**
	• pincers, tack and staple lifters:
	  ○ application (for example, removing tacks and staples from a frame)
	  ○ safe and effective use (for example, wear appropriate Personal Protection Equipment (PPE); use the appropriate tool for the fixing; ensure fingers are kept a safe distance from the striking end).

FMK3.16	**Costing:**
	• knowledge of costings, including:
	  ○ consideration of time
	  ○ cost of materials
	  ○ route to market
	  ○ difference between costing and pricing
	• the influence of costs on pricing:
	  ○ outsourcing
	  – knowledge of costings of work completed including:
	  ○ cost of materials, tools and equipment
	  ○ cost of maintenance of tools and equipment
	  ○ outsourcing
	  ○ consideration of time (for example, making)
	• difference between costing and pricing.
	• difference between estimates and quotes.

FMK3.17	**The importance of maintaining hand tools, power tools, plant and equipment, and immediate work environment:** • reduces the likelihood of injury • reduces costs • maintains efficiency of hand tools • ensures compliance with legislation and regulations.
FMK3.18	**The principles of maintaining, calibrating and cleaning hand tools, power tools, plant and equipment:** • working within own limits of competence • checking calibration documentation where applicable and recalibrating as required • following manufacturers' instructions • using appropriate cleaning materials • maintaining cleaning and servicing equipment records • reporting faulty machinery or equipment to an approved technician or manufacturer • safely disposing of equipment that cannot be repaired.
FMK3.19	**The sustainability and ethical factors to consider when choosing materials, methods, processes and techniques:** • environmental impact • socio-economic impact • human welfare

	• chain of custody (CoC) – validate the origin and journey of materials used in design of product • production methods • use of natural or synthetic materials • repurposing of materials • circular design – design model to minimise impact on the environment.
FMK3.20	**Methods to ensure that raw materials are ethically and sustainably sourced:** • choosing a reputable supplier • using raw materials with industry recognised certification (for example, FSC for wood and Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)) • choosing local rather than national or international suppliers • using a transparent supply chain.

FMK3.21	**The principles of waste management:**
	• refuse:
	  o minimising waste by refusing to use non-recyclable products or environmentally unfriendly suppliers
	• reduce:
	  o reducing use of harmful chemicals, non-recyclable materials and wasteful processes
	• reuse:
	  o reusing materials where possible as opposed to disposal
	• repurpose:
	  o adapting product or material so it can be used for a different purpose
	• recycle:
	  o ensuring all resources are recycled where possible if they cannot be reused or repurposed.

FMK3.22	**The importance of reducing waste:** • lowers operating costs • contributes to a more sustainable business model • potential to produce more products from materials • reduces unnecessary waste to landfill • conservation of resources • climate change.
FMK3.23	**The types of methods used to mitigate and reuse waste where options to reduce have been exhausted:** • optimising usage of materials using lay planning • repurposing materials • using waste materials for packaging • recycling waste where appropriate.

FMK3.24	**The types of roles within the making process and their purpose:**
	• designer:
	  ○ creates furniture or interior concept
	  ○ creates sketches, drawings or renderings
	• trade supplier:
	  ○ provides materials and components to tradespeople, often in larger quantities and usually at a lower cost than retail
	• manufacturer/fabricator:
	  ○ makes components for the design
	  ○ assembles components for the design
	• specialist service provider:
	  ○ provides a skillset necessary for the completion of the product
	  ○ provides a more cost-effective service not available in-house
	• technician:
	  ○ maintains the smooth operation of the work environment
	  ○ completes safety checks and keeps accurate records of maintenance, accidents and incidents
	• apprentice:
	  ○ provides support to the qualified crafts person
	  ○ develops first-hand industry experience
	  ○ learns both at the place of work and in conjunction with a recognised apprenticeship scheme.

Performance Outcome 4: Use the selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the design

What skills do students need to demonstrate?

FMS4.1 Create required documentation for realisation of the design brief:
• produce specification based on the approved design, using notation where appropriate
• produce working drawings to BSI standards, to include:
  ○ technical drawing
  ○ cutting list
  ○ process list
  ○ layout diagram
  ○ templates, jigs rods.
• use standard symbols and technical language correctly on all documentation
• use correct conversion factor and formulae
• use relevant digital tools
(D1, D3, E1, E3, M3, M4, M5, M6, M7)

FMS4.2 Determine required materials to realise the design brief: • make reasonable approximations to identify quantities required • identify suitable suppliers • establish availability of materials • establish lead times for supply of materials (M2, M5)
FMS4.3 Prepare materials and workspace: • ensure that correct materials and tools are available and ready for use • keep work area clean and tidy • inspect materials for flaws or faults and respond appropriately • prepare the materials, where appropriate • clean and store tools appropriately after use
FMS4.4 Select and utilise tools and machinery to realise the final design: • select appropriate tools or machinery according to the specification • set up or prepare tools or machinery according to manufacturers' instructions • ensure tools or machinery are clean and ready for use • ensure blades and cutting bits are sharp • wear appropriate Personal Protection Equipment (PPE)for the tool, machinery or material • adjust tools or equipment to suit different materials and test on an off cut, if appropriate • operate tools and machinery in accordance with health and safety legislation
FMS4.5 Set up and operate machinery, tools and equipment: • Set up machinery, tools and equipment as per manufacturers' instructions and organisation's workshop practice

FMS4.6 Measure components accurately:

- refer to working drawings
- use appropriate measuring tools for the task
- ensure measuring tool and workpiece are clean
- calibrate measuring equipment
- ensure workpiece is correctly held to ensure an accurate reading
- use correct units
- double check measurements

(M1, M2)

FMS4.7 Apply selected processes and techniques to realise ideas by making and finishing the items within defined parameters:

- create jigs and templates to meet furniture making specifications:
  - apply the jig and template-making process
  - ensure measurements are accurate
  - perform a trial cut on an off cut if necessary
  - adjust jig or template, if required.
- create components, using appropriate process or technique to realise the final design (for example, cutting, drilling or moulding):
  - use materials mindfully and efficiently to minimise waste
  - comply with health and safety procedures and other relevant legislation.
- assemble required components to realise the final design:
  - adhere to the specification and technical drawings
  - apply the appropriate joining techniques, if necessary
  - use appropriate tools, jigs and templates to ensure accuracy and quality
  - perform a trial assembly or ‘dry run’
  - use appropriate assembly method to join or secure components
  - clean workpiece as appropriate.
- prepare surfaces and apply furniture finishes:
  - refine edges of the assembled piece, if required
  - select appropriate finish for the material and desired outcome
  - clean material prior to finish
  - apply finish with appropriate tools and equipment
  - wear appropriate Personal Protection Equipment (PPE)

(M1, M2)

FMS4.8 Work safely in workshop when performing processes and techniques:

- adhere with workshop safety rules and procedures.
- assess problems and potential dangers:
- follow risk assessment processes
- record appropriately
- escalate if required.
- keep work area clean and tidy
- use equipment appropriately to suppliers'/manufacturers' instructions
- select an appropriate space to carry out tasks
- use resources safely and efficiently and report depleted resources, where appropriate
- take action to remedy wear of tools whilst in use (for example, replace worn blades or sharpen chisel)

(E3)

FMS4.9 Assess problems and potential dangers:

- problem-solve and assess dangers that may arise keeping a record as necessary
- detect flaws in timber
- make decisions to avoid/repair flaws before use

FMS4.10 Prepare timber with suitable datum surfaces:

- waste: chisel, plane, turn, route, cut, sand, drill, create joints, mould, saw and plane wood to create components

FMS4.11 Assemble components:

- assemble components to required specification and apply appropriate joining techniques

FMS4.12 Finally prepare surfaces for selected furniture finishes:

- apply finishes

FMS4.13 Manage waste safely and ecologically:

- choose appropriate waste management method
- store usable excess material appropriately and safely
- dispose of waste materials safely, according to manufacturers' instructions or workshop policies and procedures

FMS4.14 Maintain a clean and clear workspace.

FMS4.15 Store materials safely:

- observe manufacturers' instruction concerning storage
- adhere to workshop policies and procedures for safe storage of materials

FMS4.16 Package product for safe delivery to client:

- photograph product
- ensure all components for shipping are gathered
- choose appropriate packaging for shipping products
- temporarily secure moveable parts
- protect delicate or sharp edges and corners
- ensure adequate packaging is applied to prevent breakages

What underpinning knowledge do students need?	

FMK4.1	**The features of specifications and working drawings:**
	• specification:
	  ○ purpose of the item
	  ○ overview of materials used
	  ○ final dimensions of the item
	  ○ finishes
	• working drawings:
	  ○ formal drawings:
	  – detailed material specifications
	• working exploded views, sectional views, auxiliary views:
	  ○ units of measurement
	  ○ joining techniques
	  ○ assembly instructions
	  ○ cutting list, including annotations
	  ○ process list, including:
	  – project schedule (for example, Gantt chart)
	  – instructions for the order of production of components (for example, flow chart)
	  – phases of production for each component in relation to the other
	  – positioning of components on the material to maximise its use
	  ○ templates and jigs (for example, capping; front facings; cutting joints; edge profiling).

FMK4.2	**The importance of accuracy, acceptable tolerances and the ability to produce within defined parameters:** • lay planning to ensure fit within the board material • joints fit accurately together • produces more aesthetically pleasing results • manages budget effectively • assures correct orientation of grain • provides economical use of the material.
FMK4.3	**The principles of measuring accurately:** • using the correct conversion factors and units to determine size and scale • using the correct measuring and marking tools for the task • identifying acceptable tolerances • double-checking measurements before cutting.
FMK4.4	**The process for troubleshooting potential problems:** • identifying faults and flaws and defining the problem • investigating and examining possible causes • researching alternative solutions • selecting a preferred solution • implementing the solution • reflecting on the changes made and recording changes for future reference.

FMK4.5	**Common faults and flaws in materials and possible solutions:**
	• knots:
	  o adjusting cut to accept the knot
	  o using different section of material
	• fault in timber – splits and shakes, latex canals, resin pockets
	  o using new section of material to work around the flaw
	  o replacing material
	  o using filler where appropriate
	• warped material:
	  o using new section of material to work around the flaw
	  o replacing material
	  o planing or heating to remove the warp in material.

FMK4.6	**The responsibilities of the employee to ensure compliance with health and safety and other relevant legislation:** • wear appropriate personal protective equipment (PPE) • follow workplace systems, processes and procedures • contribute to and follow risk assessments • complete required training • carry out tasks and use equipment that the employee is trained to undertake, reporting dangerous occurrences or damaged equipment to the employer.

FMK4.7	**The purpose of personal protective equipment (PPE) when working with materials in different workshops:**
	• eye protection:
	  o prevent the passage of debris, chips, particles and dust into the eyes produced when using power and hand tools
	  o protect against splashes when working with chemicals or hazardous liquids
	• full face/head protection:
	  o face shield:
	  – protects against possible spray or splashes produced when working with harmful liquids
	  – extends across face from eyebrows to chin
	  – can be used in conjunction with eye protection
	  – positive air supply to prevent dust/fume inhalation
	  o ear plugs/defenders:
	  – protect ears from excessive noise in work area
	• nose and mouth protection:
	  o disposable masks.
	• hand and arm protection
	  o gloves/disposable single use gloves/gauntlets:
	  – prevent against skin irritation when handling materials
	  – provide prevention of absorption of harmful substances through the skin

	– protect against minor puncture wounds, cuts or abrasions when working with tools and materials – protect against burns when using oils, solvents and mild corrosive materials • body protection: o overalls/apron: – protect clothing from damage or staining – protect the body from splashes and debris • foot protection: o safety boots and shoes o protect against risk of injury from falling or rolling objects.
FMK4.8	**The purpose of creating jigs and templates:** • speeding up production of identical components • maintaining consistency when manufacturing a batch • testing the accuracy of the measurements before working on the final piece.
FMK4.9	**The process involved in creating jigs and templates to meet furniture making specifications:** • understanding the function of the jig, rod or template • selecting appropriate material and thickness for the jig or template • creating an outline of the final shape, taking into consideration: o technical drawings o guide allowance o kerf of the cutting tool o tolerance • cutting template or jig by hand or computer-aided manufacturing (CAM) • assembly template or jig, using fixings where appropriate.
FMK4.10	**The advantages and limitations of joints and joining techniques used in furniture making:** • have a working knowledge of the construction and application of joints suitable for use with hard and soft woods • butt – two pieces of wood meet without an interlocking element: o advantages (for example, quick method of construction; can be used with timber and man-made boards) o limitations (for example, can only join two pieces with the grain running in the same direction; relies on the quality of the adhesive used and the surface area of the parts to be joined) • dowel – two pieces of timber are brought together and dowel rods are inserted into drilled holes to strengthen the joint: o advantages (for example, can be stronger than other joints; simple to cut with the aid of a dowel jig; relatively quick method of construction) o limitations (for example, requires an element of accuracy to align the holes for dowel rod) • mitre – angled cut usually 45º to create a 90º joint: o advantages (for example, more aesthetically pleasing; creates a greater surface gluing area than a butt joint)

	○ limitations (for example, difficult to create accurately without a jig; can open up when wood expands) • lap – usually 90º joints with an element of interlocking: ○ advantages (for example, stronger than a plain butt joint; can be taken apart easily) ○ limitations (for example, exposes some of the core/end grain; gluing strength is limited compared to other complex joints) • mortice and tenon joints – join two pieces of wood at an angle, usually 90º: ○ advantages (for example, strong and reliable joint; used for decorative purposes) ○ limitations (for example, difficult to cut) • dovetails – interlocking two pieces of wood that resist a pulling action: ○ advantages (for example, very strong and hardwearing; used for decorative purposes) ○ limitations (for example, requires skilled craftsmanship when cut by hand; mistakes are easy to see as the joint relies on uniformity) • biscuit – oval-shaped flat dowel used to reinforce or in locating joints: ○ advantages (for example, can be used to reinforce other joints; quick and easy to cut with a biscuit jointer) ○ limitations (for example, requires specialist power tools; limited strength in comparison with other woodworking joints) • halving: ○ advantages (for example, stronger than a plain butt joint; can be taken apart easily; relatively quick to produce) ○ limitations (for example, exposes some of the core/end grain; gluing strength is limited compared to other complex joints; not weight bearing unless reinforced) • bridle: ○ advantages (for example, more aesthetically pleasing; creates a greater surface gluing area than a butt joint) ○ limitations (for example, difficult to create accurately without a jig; can open up when wood expands) • pins, nails, tacks and staples: ○ advantages (for example, quick, easy and inexpensive to use; readily available; available in a variety of sizes and finishes; can be used on a variety of materials) ○ limitations (for example, low load bearing capability; additional work may be required to disguise their use; may cause splitting in timber or plastic; may cause corrosion in certain timbers) • screws: ○ advantages (for example, pulls the joint together; greater tensile strength than pins, nails, tacks and staples; easy to remove) ○ limitations (for example, visible within the material; may require additional labour time to install; thread alone may not be sufficient to bear the load)

	• knock down fittings:
	  ○ advantages (for example, allows for disassembly; quick and easy to remove)
	  ○ limitations (for example, visible within the material; not aesthetically pleasing; cannot be used with all materials or material thicknesses)
	• bonding (for example, polyurethane (PU), hot melt glue, two-part epoxy, spray glue, superglue or polyvinyl acetate (PVA)):
	  ○ advantages (for example, easy to use; relatively inexpensive; allows for repositioning during glue open time; allows for a clean finish)
	  ○ limitations (for example, bond not as strong as other joining methods; may mark material if excess is not removed immediately; some glues have a very limited open time; may cause skin irritation)
	• soldering:
	  ○ advantages (for example, can be used on smaller joints; can be a permanent or temporary joint; minimal equipment required)
	  ○ limitations (for example, join can be brittle; material used in soldering may be toxic; cannot be used for large joints)
	• brazing:
	  ○ advantages (for example, does not distort or damage the components; different materials can be joined; once brazed the joint requires little or no finishing)
	  ○ limitations (for example, may result in the discolouration of the material; accurate preparation of the joint is required to ensure a successful join; material used in brazing may be toxic)
	• welding:
	  ○ advantages (for example, very strong and hardwearing; permanent fixing method)
	  ○ limitations (for example, requires skilled workmanship for tidy and clean aesthetic; separating welded parts will cause damage to the materials; specialist equipment is required).

FMK4.11	**Considerations to make when choosing an assembly method:** • component material used • whether permanent or temporary assembly is required • aesthetics • durability of assembly method • speed of assembly required • location of finished piece.

FMK4.12	**Factors to consider when packing products for delivery to the client:**
	• packing product safely:
	  ○ restricting movement
	  ○ lessens risk of damage
	  ○ protects from weather damage

	• choice of packing materials:
	  ○ wooden crates
	  ○ foam
	  ○ cardboard
	  ○ air-filled packaging
	  ○ polythene furniture bags
	• sustainability of packaging materials:
	  ○ reusable
	  ○ recyclable
	  ○ biodegradable.

Performance Outcome 5: Review and evaluate the design process and product against the original brief and proposition

What skills do students need to demonstrate?

FMS5.1 Evaluate the extent to which the finished product meets the design brief:
• apply success criteria to evaluate the finished product:
  ○ determine if the product was completed within agreed timescales
  ○ identify variance in the expenditure against set budget
  ○ determine quality of the finished product:
  – fitness for purpose
  – design interpretation/meets client requirements
  – aesthetic appeal
  – sustainability of the design process and finished product.
  ○ feedback from client was responded to
  ○ end-user (client) satisfaction
  ○ comparison of evaluation findings against student design
  ○ reflection on outcome and future developments
  ○ record and document evaluation
(D5, E1, E3, E4, E5, M2, M5, M6, M8, M9)

FMS5.2 Review and assess the final outcome against the production schedule:
• apply reflective practice to review the final outcome:
  ○ review efficiency and waste with considerations towards selection and application of:
  ○ raw materials
  ○ processes and techniques
  ○ tools and equipment:
  – quantities of materials ordered
  – planning and use of time
• ethical and sustainable approaches to the design process
• review the quality with consideration towards:
  ○ suitability of raw materials
  ○ design decisions
  ○ processes and techniques employed to achieve desired effect
  ○ tools and equipment applied to achieve desired outcome
  ○ effectiveness of quality assurance tests and processes
• cost effectiveness with consideration towards:
  ○ sourcing and quality of raw materials
  ○ efficient planning and project management
• compare reflective practice findings against production schedule
• record and document findings
(D3, D4, E1, E3, E4, E5, M2, M9, M10)

FMS5.3 Establish if design brief has been achieved and ascertain areas for future improvement:

- implement appropriate evaluation methods with the end user, to determine:
  - levels of satisfaction
  - fitness for purpose
  - areas for improvement
  - evaluation methods, may include:
    - customer satisfaction survey
    - focus groups
    - user testing
- record and document evaluation findings
- draw conclusions and express opinions using evaluation findings to identify areas for future improvement

(D3, D4, D5, E1, E2, E4, E5, E6, M5, M6, M10)

FMS5.4 Reflect on outcome, update digital portfolio and consider actions for future development:

- record and document findings of reflective practice including:
  - examples of good practice
  - identified improvements to design processes
  - areas for future improvement
  - ideas for future innovation

(D2, D4, E3, E4, E5)

What underpinning knowledge do students need?	

FMK5.1	**How to assess the final product against the original brief and production plan:**
	• success criteria:
	  ○ timescales – completed on time to agreed deadline
	  ○ budget – completed within set and agreed budget
	  ○ quality:
	  – raw materials used
	  – processes and techniques applied
	  – tools and equipment used
	  – design interpretation
	  ○ fitness for purpose
	• meeting success criteria:
	  ○ completed on time
	  ○ completed within set budget
	  ○ dimensions are suitable
	  ○ fitness for purpose (ergonomics, waterproof), meets customer requirements
	  ○ aesthetically appealing
	  ○ feedback from client was responded to

	• meets end-user requirements:
	  o customer satisfaction survey
	  o focus groups
	  o user testing
	• meets client's satisfaction:
	  o review client feedback from each stage of design
	  o final client interview
	  o client satisfaction survey.

FMK5.2	**How reflective practice is used within the design process to inform decision making, for example, revisions, justifications, choices:**
	• reflective documents – record of ideas, learning, feelings, observations, thoughts and emotions:
	  o provides rationale for decision-making process
	  o challenges own decision-making process
	  o considers ideas not taken forward to inform further development or revisions
	  o reviews assumptions that may later be tested
	  o remains open-minded to new and different approaches
	• peer groups – discussion and feedback with colleagues or other practitioners:
	  o provides fresh insight into decision making
	  o challenges own assumptions
	  o offers benefits of others' experiences and sharing good practice
	• formative evaluation – ongoing reflection throughout the process:
	  o reviews for suitability of selected processes, materials, tools and techniques at each stage of design
	  o provides opportunity for timely revision
	  o implements feedback from client, customer and end user at each stage
	• summative evaluation – final reflection providing unbiased and evidence-based conclusions:
	  o reviews the outcome of decisions and choices
	  o identifies possible improvements
	  o identifies good practice.

FMK5.3	**How to use reflective practice to plan progress and future development:**
	• use and document reflective practice to:
	  o identify improvements in processes and techniques used to be applied in future developments
	  o highlight good practice demonstrated that can be shared and applied in other projects
	  o improve the quality of finished product by reviewing at milestones throughout the process
	  o encourage innovation and experimentation
	  o reduce the potential for mistakes by understanding each step in the process
	  o improve the efficiency of design process

	○ identify the suitability of tools and techniques to achieve the required outcome ○ increase understanding of the concept to finished product process ○ develop confidence with the application of repeated processes.
FMK5.4	**How to apply knowledge gained to future projects:** • plan: ○ plan required improvements • do: ○ standardise and optimise processes • review: ○ analyse results ○ review costs • act: ○ review the solution ○ capture data at each stage of production.

Scheme of Assessment: Furniture Maker (Maker)

There are two task assessments for this Occupational Specialism.

Both tasks are completed during a window set by Pearson, during which Providers schedule supervised assessment sessions. Task 1 activity 1 is timetabled by Pearson.

Task 1 is an extended 'Design and Make' task that consists of nine substantive activities.

Task 2 is a Make to a specification task that consists of substantive activities.

These tasks are important to ensure students can demonstrate threshold competence and are able to evidence all the skills required by the Performance Outcomes.

Occupational Specialism Task 1 – Design and Make
Internally assessed, externally moderated project: 69 hours and 50 minutes **192 marks**
Performance Outcomes In this task students will: **PO1** – Analyse, interpret and respond to a creative proposition or brief taking on board purpose and end user **PO2** – Create designs to realise the brief PO3 – Research and evaluate materials, processes, tools and techniques to determine suitability to realise the design **PO4** – Use the selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the design **PO5** – Review and evaluate the development process at each stage against the original brief or proposition to refine production methods and product.
Assessment overview Task 1 is made up of nine substantive activities. • Activity 1: Interpret the brief and conduct research • Activity 2: Furniture ideas and experimentation with 2D/3D furniture materials, techniques and processes • Activity 3: Presentation, feedback and refinement of ideas • Activity 4: Pitch preparation • Activity 5: Pitch presentation • Activity 6: Final design testing phase • Activity 7: Produce final technical drawings, final costings and final production schedule • Activity 8: Make final furniture piece • Activity 9: Evaluation Students respond to a given scenario to complete task 1. They are assessed on their application of the skills listed for the Performance Outcomes.

Students are not assessed against specific 'knowledge' outcomes but are expected to draw on and apply related knowledge to ensure appropriate outcomes when applying the skills in response to an assessment scenario.

Students undertake the assessment under a combination of supervised and controlled conditions.

The assessment takes place over multiple sessions, up to a combined duration of 65 hours and 50 minutes.

The task outcomes consist of a physical item or items that have been designed and made, supported by a portfolio of evidence submitted electronically.

This task is set by Pearson and marked by the provider. Pearson will externally moderate the marks.

Occupational Specialism Task 2 – Make to a specification

Internally assessed, externally moderated task: 19 hours and 30 minutes

81 marks

Performance Outcomes

In task 2 students will:

PO4 – Use the selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the design

PO5 – Review and evaluate the development process at each stage against the original brief or proposition to refine production methods and product.

Assessment overview

Task 2 is made up of three substantive activities.

- Activity 1: Make the door
- Activity 2: Build the cabinet
- Activity 3: Evaluation

Some activities have sub-activities within them.

Students respond to a given scenario to include a technical specification to complete a technical making task or tasks. They are assessed on their application of the skills listed for the Performance Outcomes.

Students are not assessed against specific 'knowledge' outcomes but are expected to draw on and apply related knowledge to ensure appropriate outcomes when applying the skills in response to an assessment scenario.

Students undertake the Make to a specification task under a combination of supervised and controlled conditions.

The assessment takes place over multiple sessions, up to a combined duration of 19 hours and 30 minutes.

The Make to a specification task outcomes consist of physical objects the have been made to a set specification, supported by a portfolio of evidence submitted electronically.

This assessment is set by Pearson and marked by the provider. Pearson will externally moderate the marks.

Administration

Providers must follow the guidance in the following:

- General Administrative Support Guide
- Administration Support Guide for the specific Technical Qualification Occupational Specialism (if applicable)

These are located on the Training and Admin Support webpage.

Performance Outcome		Weighting	
		Raw marks	% of total marks
PO1	Analyse, interpret and respond to a creative proposition or a brief taking on board purpose and end user	32	12.3%
PO2	Create designs to realise the brief development	39	14.9%
PO3	Research and evaluate materials, processes, tools and techniques to determine suitability to realise the design	54	20.7%
PO4	Use the selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the design	118	45.2%

Resources for the delivery of Furniture Maker (Maker)

Providers are required to have the following resources to deliver this OS:

- IT suite with access to the internet, design software (for example, Canva, SketchUp, Blender, CAD (Sketchup, AutoCAD, Solidworks), Adobe Creative Cloud (Photoshop/Illustrator), InDesign) and digital facilities, including image scanner
- online subscriptions (for example, Home and Garden, Home, LivingETC, Interior Design, Ideal Home)
- relevant subject-specific books, journals
- teachers with qualifications and/or experience in the furniture making/upholstery sector
- a curriculum team with experience and knowledge that span the breadth of the qualification content.

Assessment Task	Resource required
1 'Design and Make' task	• access to the internet • digital facilities (for example, image scanner, digital camera, printer) • traditional drawing materials media (for example, paper, pencil, ink, paints, collage materials) • relevant subject-specific books, journals • digital portfolio • photographic equipment • wood working workshop, materials, tools and equipment • presentation software (for example, PowerPoint, Prezi etc.) • audio-visual recording equipment, for example, tripod, camera • clock • wood working workshop, materials, tools and equipment • additional materials to enhance how work is showcased. Pearson-provided resources: • reference list template • experiment recording template • health and safety record template. • peer feedback template • estimated timeline plan template • costings template. • client feedback template • final testing materials record • health and safety record for testing material • production schedule template • contingency plan template • final design making record template • evaluation template.

Assessment Task	Resource required
2 Technical 'Make' task	• a large sheet of paper or thin ply to draw a full-size rod of the door • paper for a cutting list • measuring equipment, pencil • marking and measuring equipment • try square • table saw • planer thicknesser • suitable Personal Protection Equipment (PPE)and H&S considerations • plunging router/spindle molder and fence/router table set up with 6mm straight cutter or hand tools • plunging router/spindle molder set up with 6mm tongue cutter/bandsaw/hand tools to form the tenons • materials suitable for drilling and making jigs with 5.5mm holes • drill for handle holes (2mm drill) for hinge screw pilot holes • 35mm hinge housing cutter • pedestal drill or similar drill press • abrasive paper • belt/random orbital sander • sash cramps • try square, straight edge • sheet of paper • long straight edge • materials suitable for making drilling jigs • measuring and marking tools • suitable cutting tools • suitable fixings for jig components • drill bits of suitable size for dowels and screw clearance and pilot holes • pedestal drill or similar drill press • suitable lipping material • dowels • suitable adhesive for the dowels • screwdriver • adhesive • drill • screws • attaching blocks. Pearson-provided resources: • evaluation template.

Furniture Maker (Maker) global resource list

- subject-specific books, magazines, journals and other print materials
- materials (for example, varieties of timber)
- machine tools (for example, circular saw, table saw, chop saw, radial arm saw, plunging router, spindle moulder, router table, mortice machine)
- pedestal drill, hand drill/battery drill
- hand tools (for example, selection of hand planes, various sizes of firmer, bevel edged and mortice chisels, wooden mallet, handheld and cordless screwdrivers)
- nail punchers
- marking gauge
- mortice gauge
- hammers - cross pein hammer, pin/pattern, claw
- hand saws (for example, panel, tenon dovetail, rip and crosscut)
- measuring tools (for example, set square, metal rule, try square)
- clamps
- G clamps, speed clamps, sash clamps
- range of waxes, varnishes, adhesives, stains
- bradawl
- sharpening stones
- cabinet scraper
- spoke shave
- rasp and files
- paper, cardboard (for templates)
- Personal Protection Equipment (PPE) (for example, filter mask, gloves, safety goggles and boots).

4. Furniture Maker (Upholsterer)

Performance Outcome 1: Analyse, interpret and respond to a creative proposition or a brief taking on board purpose and end user

What skills do students need to demonstrate?
UPS1.1 Clarify the purpose of the design brief through analysis: • determine the need for the product • identify the end user • establish where the product is going to be used • establish how the product is going to be used (E4, E5)
UPS1.2 Determine the parameters and expectations of a design brief to create an initial specification: • identify the appropriate target market • identify current industry trends • consider cultural and historical context • establish the budget available • establish the importance of each parameter in relation to the design brief • establish timescales (E4, E5, M5)

UPS1.3 Explore design principles in response to the design brief:
• experiment with each design principle:
  ○ function
  ○ texture
  ○ size
  ○ shape and form
  ○ colour
  ○ proportion
• identify the importance and limitations of each design principle in relation to the design brief
• use a range of appropriate media to record ideas, providing supporting documentation in different formats.
(E2, D1)

What underpinning knowledge do students need?	

UPK1.1	**The considerations that need to be made when producing creative products:**
	• end user (for example, the person who uses or is intended to ultimately use a product):
	  ○ interaction between product and the end user (for example, ease of use, comfort, accessibility)
	• market:
	  ○ domestic users:
	  – personality and taste of the potential user
	  – function of item (for example, chair, footstool, storage unit etc.)
	  ○ commercial users:
	  – requirements of multiple users
	  – organisation's branding
	  – appropriate size of the product for a commercial setting
	  – factors limiting the choice of materials
	• consider level of production (for example, bespoke, custom, one off, batch, mass produced)
	• budget:
	  ○ available budget of client
	  ○ project costs (for example, materials, processes, premises, installation costs, time allocation, overheads)
	• intended location of the final product:
	  ○ interior or exterior
	• intended use of the final product:
	  ○ functional or decorative
	  ○ permanent or temporary
	  ○ frequency of use
	  ○ longevity of use
	• recyclability/reuse
	• suitability of materials used
	• cultural and historical context:
	  ○ cultural:
	  – values and ideologies of markets
	  – impact of social identity on the design
	  – awareness of possible cultural sensitivities
	  ○ historical:
	  – awareness of historical periods of upholstery, furniture and art and design movements
	  – specific materials, techniques and processes of the historical period/art and design movement.

UPK1.2	**Factors that influence the purpose of an item considering the balance between function and form:**
	• function:
	  ○ practical (for example, storage, seating, providing a surface, providing comfort)
	• form:
	  ○ decorative (for example, expresses a style, status symbol, focal point of setting, enhance a space)
	• fitness for purpose
	• quality.

UPK1.3	**Factors that affect the relationship between ergonomics and the end user in furniture:**
	• dimensions
	• weight of the product
	• interaction between end user and the furniture:
	  ○ comfort
	  ○ ease of use
	  ○ reducing risk of injury
	• anthropometrics:
	  ○ personal measurements to suit particular clients who do not fall within standard ergonomic tables.

UPK1.4	**Types of design principles and their impact on design development:**
	• function:
	  ○ purpose and use of product
	  ○ balance between functionality and inclusion of aesthetic features
	• texture:
	  ○ smooth vs rough
	  ○ quality of finish
	• size:
	  ○ scale
	  ○ weight
	  ○ strength
	• shape and form:
	  ○ creates different aesthetics
	  ○ affects the functionality of a piece
	  ○ suitability for its environment
	  ○ influences the making process
	• colour:
	  ○ complements/enhances the setting
	  ○ client's taste
	• proportion:
	  ○ application of golden mean proportion ratio to achieve an aesthetic balance.

UPK1.5	**The differences between costing and pricing:**
	• costing:
	  ○ expenses incurred to produce a product/service:
	  – raw materials
	  – direct costs
	  – overheads
	• labour and machinery costs
	  ○ maintenance
	  ○ resources
	  ○ time
	  ○ production volumes
	• pricing:
	  ○ quotes
	  ○ estimates.

UPK1.6	**The factors to consider when costing a design brief:**
	• time to prepare and produce the proposal and the product:
	  ○ design requirements
	  ○ build quality
	  ○ labour and machinery costs
	• fabrication processes:
	  ○ handmade or machine produced
	  ○ suitability of materials used for fabrication
	  ○ complexity of the production process
	  ○ accuracy and type of finish required
	  ○ quantity required
	• cost of materials:
	  ○ procurement cost of the material
	  ○ fluctuating material prices
	  ○ availability of materials
	  ○ quality of materials used for the product
	• costing methodologies/models for different markets:
	  ○ economies of scale:
	  – small batch production
	  – mass/continuous production
	  ○ bespoke
	  ○ prototype or sample
	• routes to market:
	  ○ cost compared with financial return
	  ○ commission charges
	  ○ risks associated with the investment in sale or return (SoR) products
	  ○ whether a seller requires exclusivity

	• outsourcing of specialist processes:
	  ○ specialist skills or machinery not available in-house (for example, screen printing of fabric, decorative surface design)
	• outsourcing fittings, fixtures and readymade components:
	  ○ impact on project timescales if specialists are experiencing high demand
	• market competition:
	  ○ competition analysis
	• level of expertise:
	  ○ rates relative to maker's experience.

Performance Outcome 2: Create designs to realise the brief

What skills do students need to demonstrate?
UPS2.1 Review initial ideas for further development, assessing their suitability for purpose: • compare each design against the specification • assess the suitability of the design for the purpose • assess the suitability of the design for quality • select design ideas for further development (GE4, GE5)
UPS2.2 Undertake research to inform the creative product in response to the design brief: • identify the appropriate research factors • identify appropriate research sources • select and apply the appropriate research methodologies, while using primary and secondary resources • interrogate data sources for information, understanding digital rights and responsibilities (D1, D3, D5, E4, E5, M5)
UPS2.3 Record findings from research using different media: • organise and record research findings and information logically using appropriate media (for example, mood board, mind map, digital presentation, sketchbook) • identify appropriate concepts and themes • summarise findings • maintain an accurate and ongoing record of sources and references (D3, E4, E5, M5)
UPS2.4 Present ideas informally to colleagues: • select an appropriate presentation tool or technique • organise ideas and information logically   • use appropriate tone, tailoring language and technical information to the audience • record feedback in appropriate format (E2, E3, E4, E6)
UPS2.5 Refine ideas and selected medium in response to informal feedback: • assess feedback • identify if any amendments to the ideas are required • apply changes where appropriate, evaluating ideas against the specification (E4)

UPS2.6 Present ideas to client to check design against expectations:

- create medium for final presentation, using appropriate non-digital and/or digital tools
- prepare materials for presentation, incorporating a range of information and media
- compare the ideas against initial design brief
- present a range of cost options and savings to support decision making
- ask and respond to questions for clarification

(D2, E1, E2, E3, E6, M8, M9)

What underpinning knowledge do students need?	

UPK2.1	**The characteristics of qualitative and quantitative research to support development of the design brief:**
	• qualitative research – collection, analysis and interpretation of non-numerical information:
	  ○ gathers opinion and preferences
	  ○ asks open-ended questions
	  ○ requires small respondent size
	• quantitative research – collection, analysis and interpretation of numerical information:
	  ○ identifies patterns and trends
	  ○ makes predictions based on cause and effect
	  ○ forms conclusions about broader populations
	  ○ asks closed questions
	  ○ requires large respondent size.

UPK2.2	**The differences between primary and secondary research sources:**
	• primary research:
	  ○ original data and information collected by researcher
	  ○ specific to requirements of research
	  ○ ownership of data and information
	• secondary research:
	  ○ use of existing data and information compiled by others.
	• manufacturer's/supplier's specifications
	  ○ unlikely to be specific to requirements of research.

UPK2.3	Good practice for referencing research:
	• use a standard reference of the source when:
	  ○ optimising an idea, concept or opinion
	  ○ quoting data, facts or information
	  ○ using images, visuals and other media
	• accurately record research sources:
	  ○ artist/author
	  ○ bibliographic reference (for example, title of publication)
	  ○ source (for example, location or uniform resource locator (URL)
	  ○ date (for example, year of publication).

UPK2.4	**The scope of research and its value to support the development of a design brief:**
	• the market, competitors and current trends:
	  o ideology of markets, market trends
	  o identifies competitors, designers and businesses
	  o gains insight into regional variances
	  o identifies different retail options for the product
	  o improves knowledge of current and new and emerging materials and production techniques
	  o provides inspiration
	  o avoids replication of existing ideas
	• cultural context:
	  o provides insight into values and ideology of movements.
	  o awareness of possible cultural sensitivities (for example, cultural appropriation, beliefs and values, customs, respect)
	• historical context:
	  o influence of art and design movements (for example, Art Deco, Bauhaus), artists, designers, practitioners and materials, processes and techniques
	  o supports understanding of associated design and production processes
	  o influence of political ideologies, conflicts, economics, living conditions, access to materials (local/imported), value of rarer materials and how this impacts design/trends
	  o impact of social identity on a design
	• circular design concepts – approaches to the design and innovation of products to have a low impact on the environment and positive social purpose:
	  o increases awareness of the environmental impact of raw materials used and processes applied
	  o understanding supply chain and end of life of products
	  o identifies ethical sources for materials
	• sustainability of materials, processes:
	  o improves knowledge of current production methods including packaging
	  o efficiency of materials, minimising waste, recycling or reusing materials in the creation of products
	  o understanding of potential cost implications

UPK2.5	**Types of research sources and their value to support the development of a design brief:**
	• museums, exhibitions and galleries:
	  o enables first-hand experience of viewing products
	  o provides an opportunity to meet curators, professionals and experts
	• physical stores – high street and independent:
	  o enables first-hand experience of viewing products
	  o provides opportunities to handle products

	• online stores:
	  ○ offers wide ranging and variety of examples to identify trends and styles
	• books, magazines, catalogues and online journals and blogs:
	  ○ easily accessible
	  ○ provides opportunities to study other works
	  ○ identifies trends and styles
	  ○ provides insight into technologies, processes and techniques
	• digital/online sources:
	  ○ vast range, also covers new and emerging technologies
	  ○ social media enables interaction with makers
	  ○ up to date with trends
	• workshop visits:
	  ○ provides opportunities to meet designers, practitioners and experts
	  ○ provides insight into processes and techniques
	• observations and insights gained from experience:
	  ○ draws information from unexpected sources, previous projects and customer satisfaction feedback
	• commercially available market analysis reports:
	  ○ breadth of market information
	• surroundings:
	  ○ design inspiration (for example, colours, textures and pattern).

UPK2.6	**The advantages and limitations of different routes to market:**
	Understand where products fit in the market before targeting where to sell or market work.
	• exhibitions and trade shows:
	  ○ advantages:
	  – exposure to larger retailers
	  – networking opportunities
	  – engagement with customers
	  – presence of direct competitors
	  ○ limitations:
	  – costs to hire exhibition space or stand
	  – cost of marketing materials
	  – direct exposure to competitors
	  – logistical issues
	  – extended time away from workshop
	• direct to customer:
	  ○ advantages:
	  – control over branding and presentation
	  – no commission costs
	  – increased exposure
	  – personal interaction with customers
	  – high footfall – dependent on location
	  – greater control over customer engagement

	– greater control over pricing – simplified onward supply chain ○ limitations: – customer reach can be limited by store location and opening hours – need to identify own customers – deliver products in certain timeframe • retail – selling to retailers: ○ advantages: – high visibility for the product – boost own brand recognition – potential to build high volume sales ○ limitations: – operates on a small profit margin – reliance on small number of customers to increase market share – restricts selling similar products at a reduced price • wholesale: ○ advantages: – sell products in large volume – risk of selling is absorbed by wholesaler ○ limitations: – profit per item may be lower – no opportunity to build relationship with end user • sales agents: ○ advantages: – market knowledge – experience and contacts provide sales opportunities ○ limitations: – relationship management with distributor – commissions can change affecting profit margins.
UPK2.7	**The purpose of the following tools and techniques employed in the development and presentation of concept:** • mood board – visual collage to organise and communicate concepts and ideas: ○ physical – collection of real-world items ○ digital software – curate and display digital items • concept map – graphical technique for structuring qualitative research data: ○ physical – hand-drawn/written diagrams ○ digital software – create, share and interact across digital media • 2D representation – informal and quick technique to capture initial concepts: ○ sketch book ○ digital drawing • 3D representation – formal and precise technique to capture refined ideas: ○ computer-aided design (CAD) ○ maquette/model.

UPK2.8	**The differences between formal and informal communication methods:**
	• formal (for example, presentation to client):
	  o detailed and structured
	  o recorded and documented
	• informal (for example, discussion, peer review):
	  o free flowing and spontaneous
	  o no formalities
	  o not recorded.

UPK2.9	**Advantages and limitations of different ways to communicate ideas:**
	• presentations:
	  o advantages:
	  – allows interaction with the audience:
	  – can be physical or virtual
	  – allows observation of reactions and non-verbal cues
	  – provides opportunities to ask audience questions and gain feedback
	  o limitations:
	  – time constraints
	  – availability of clients or resources
	• discussion (for example, in person, virtual or telephone):
	  o advantages:
	  – builds client relationships
	  – sets early expectations
	  – opens discussion on ideas and outcomes
	  o limitations:
	  – time spent may not be recouped
	• visual communication:
	  o advantages:
	  – extends visual/sensory understanding of designs/materials
	  – accurate representation of colour and/or texture
	  o limitations:
	  – preparing samples can be time consuming
	  – final products may not look exactly the same as the sample
	• electronic communication:
	  o advantages:
	  – can be informal and formal
	  – faster response times
	  – can provide interactive content
	  – ease of duplication of information
	  – ease of communication worldwide
	  – ecological as it removes need to travel to visit clients
	  o limitations:
	  – messages can be lost when in high volumes, moved into spam/junk or not sent
	  – potential ambiguity due to interpretation of content
	  – perception of design can be different between sender and receiver.

UPK2.10	**The purpose of using furniture drawings and specifications:** • communicates ideas between the maker and client • helps the maker develop and refine ideas • co-ordinates and schedules processes and resources • identifies proportions and constructional details.

UPK2.11	**The differences between drawing techniques used to present design ideas:**
	• preliminary sketches:
	  o provides basic outline of an initial idea or concept before elaborating further
	  o supports the understanding and interpretation of the initial design brief between the client and maker
	  o helps to optimise initial ideas
	• orthographic 2D and 3D projection:
	  o provides detailed technical information to help plan production
	  o drawing to industry standards using scale and formal BSI conventions
	  o use industry-standard third-angle projection, isometric views and perspective
	• assembly/exploded drawings:
	  o details the interrelationship between different parts of the design and how components are connected together
	• component layout diagram:
	  o identifies correct positioning of materials
	  o lay planning supports correct positioning and orientation of component placement on sheet material
	  o supports pattern matching
	• isometric drawing:
	  o provides three different views of the object projected at 30º angles
	• presentation drawing:
	  o provides an accurate representation of the design
	  o includes surface details
	  o may contain less technical information.

UPK2.12	**The purpose and features of specifications:**
	• purpose:
	  o to convey necessary information, which may not be identified by the drawings alone
	• features:
	  o units
	  o dimensions
	  o joining methods
	  o acceptable tolerances
	  o gauges
	  o materials

	○ scale ○ durability of material.
UPK2.13	**The application of technical language used in drawings and specifications, and pattern templates:** • views (for example, plan; elevation; section; perspective; scale; technical conventions and standard symbols right angle; angle; radius; circumference; diameter; hidden detail lines; visible line; centre line; dimension line) • labels: ○ name parts using industry-standard terms ○ use of datum surfaces • annotation: ○ surface finishes ○ joining techniques ○ upholstery techniques.
UPK2.14	**The potential capabilities and limitations of existing and emerging design and drawing technologies:** • digital design programs: ○ potential capabilities: – enables accurate and editable designs – provides calculations – tests designs under different conditions prior to manufacture – facilitates sharing and communication of ideas – creates interactive animations and drawings ○ potential limitations: – ongoing maintenance – training of staff to use the equipment • virtual reality (VR): ○ potential capabilities: – ability to present designs remotely – visualise in the end-user's setting ○ potential limitations: – cost of purchase – availability of equipment.
UPK2.15	**The potential capabilities and limitations of existing and emerging production technologies:** • computer-aided manufacturing (CAM): ○ potential capabilities: – improves precision – reduces waste – accessible technology – cost effective and accurate way to produce a prototype product compared with a handmade item ○ potential limitations: – higher energy costs – initial set-up costs may be high

	• smart materials (for example, thermochromic, photochromic or shape memory polymer): ○ potential capabilities: – enhances the experience for the end user – increases the durability of materials (for example, non-corrosive materials) – increases lifespan of products ○ potential limitations: – cost of materials – limited access to expertise – environmental impact of the materials is unknown.

Performance Outcome 3: Research and evaluate materials, processes, tools and techniques to determine suitability to realise the design

What skills do students need to demonstrate?
UPS3.1 Experiment with materials to realise the objectives of the design brief: • explore the material characteristics • work safely and effectively • consider the aesthetic appeal of the material • assess the material's ability to meet the design brief • identify the limitations of the material • use a range of media to accurately record research • use technical language in all documentation (E3, E4)
UPS3.2 Experiment with finishes to realise the objectives of the design brief: • evaluate the effects of different finishes on a material • work safely and effectively • assess the finish's ability to meet the design brief • identify the limitations of the finish (E4, E5)

UPS3.3 Experiment with chemical processes to realise the objectives of the design brief:
• evaluate the effects of chemicals on surface details of different materials
• work safely and effectively:
  ○ comply with relevant health and safety legislation and regulations
  ○ use appropriate Personal Protection Equipment (PPE)
• assess the chemical process's ability to meet the design brief
• identify the limitations of the chemical process
• use a range of media to accurately record research
• use technical language in all documentation
(E4, E5)

UPS3.4 Research and evaluate different materials, finishes and chemical processes:

- undertake research of different materials, finishes and chemical processes to determine suitability for use
- evaluate the impact of different materials, finishes and chemical processes, considering:
  - cost
  - availability
  - affordability
  - sources and suppliers of raw materials
  - environmental impact.
- interrogate data sources, accurately record research, organise ideas and information logically
- use technical language correctly in all documentation, using graphics and other tools to aid understanding

(D2, D3, E1, E2, M8, M9)

UPS3.5 Maintain accurate records of research and testing:

- produce records of ongoing information regarding the progress and outcome of testing and research
- produce 3D models to aid possible construction

(E3, E5)

UPS3.6 Select appropriate materials for bespoke upholstery designs to be produced:

- review records of research
- evaluate against the design brief and specification
- draw conclusions
- create a shortlist of appropriate materials for presentation to the client

(M1, M2, M3)

UPS3.7 Use hand and machine tools safely to experiment with materials:

- select appropriate tools for the task
- select materials for use:
  - make reasonable approximations of material required
  - accurately measure materials prior to using tools
- apply or use the tools correctly and safely:
  - wear appropriate Personal Protection Equipment (PPE)
  - comply with workshop guidelines
  - use according to manufacturers' instructions
  - apply good practice when using tools maintaining them as necessary in use
  - ensure that blades and cutting bits are sharp and fit for purpose
  - turn off machinery and isolate on completion
  - clean, return and store appropriately after use

(E3, D2, D4)

UPS3.8 Reassess the design against the design brief: • re-evaluate the design against the original brief and specification • amend or adapt design concepts, following research findings or informal discussions: ○ incorporate a range of information and media • create a summary of any proposed changes to the design for presentation to the client (E1, E2, E3, E4, E6)

UPS3.9 Finalise and formally pitch design:
• prepare material for presentation
• select appropriate presentation format (for example, presentation software plus samples)
• use industry-standard terminology
• present/pitch to client:
  ○ explain decision-making process and justify selection of choices.
  ○ invite feedback.
• record and document feedback
• adjust design accordingly

What underpinning knowledge do students need?	

UPK3.1	**Factors to consider when calculating the finished dimensions of the product:**
	• size:
	  ○ material constraints
	  ○ suitability for final location
	  ○ installation considerations
	• scale:
	  ○ choice of material
	  ○ pattern match
	  ○ proportion
	• dimensions:
	  ○ suitability for final location
	  ○ awareness of environment limitations
	  ○ ergonomics and anthropometric data
	• weight:
	  ○ transportation
	  ○ intended location
	  ○ mobility.

UPK3.2	**The purpose and application of health and safety legislation and regulations in the context of furniture:**
	• The Control of Substances Hazardous to Health Regulations 2002:
	  ○ purpose:
	  – requires employers to control substances hazardous to health by reducing or preventing employees' exposure to these substances

	○ application: – using data sheets to identify potential hazards and understand the requirements for safe practice – using appropriate control methods – using personal protective equipment (PPE) where stipulated and provided • The Provision and Use of Work Equipment Regulations 1998: ○ purpose: – defines employers' responsibilities to provide appropriate equipment for use at work which is suitable for its intended use ○ application: – ensuring tools and electrical equipment are maintained and repaired appropriately – keeping records of maintenance of tools and equipment – ensuring compliance with industry safety standards • Health and Safety at Work etc. Act 1974: ○ purpose: – defines employers' responsibilities to protect the health, safety and welfare of employees at work and members of the public and defines employees' responsibilities to take reasonable care of themselves and other people who may be affected by their actions or omissions ○ application: – undertaking risk assessments to identify hazards – ensuring only adequately trained employees use equipment – providing a safe working environment that is properly maintained • The Personal Protective Equipment at Work (Amendment) Regulations 2022: ○ purpose: – defines employers' responsibilities to provide appropriate Personal Protection Equipment (PPE) to reduce harm to employees, visitors and clients ○ application: – supplying appropriate PPE to employees – ensuring workers have sufficient information, instruction and training on the use of PPE – selecting equipment and PPE suitable to the task – ensuring the PPE is used correctly by employees – maintaining and storing PPE correctly and reporting damaged or worn PPE • The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013: ○ purpose: – defines employers' duties to report serious workplace accidents, occupational diseases and specified dangerous occurrences ○ application: – maintaining an accident book – recording incidents and near misses – reviewing accidents and identify trends

	• The Manual Handling Operations Regulations 1992:
	  o purpose:
	  – requires employers to assess and minimise the risk to employees' health involved in the manual handling, moving and positioning of an object, person or animal and workplace ergonomics
	  o application:
	  – following correct guidance and training
	  – taking reasonable care over own and others' health and safety.
	• The Control of Noise at Work Regulations 2005:
	  o purpose:
	  – requires employers to assess and minimise the risk to employees from excess noise while using machinery in the workplace
	• Work in Compressed Air Regulations SI1966/1656:
	  o purpose:
	  – requires employers to ensure that all compressed air equipment is regularly maintained and is safe to use
	• Furniture and Furnishings (Fire Safety) Regulations 1988/89 (currently under review):
	  o purpose:
	  – requires that all materials used in upholstery meet each specified element within the regulations
	  – requires all re-upholstery carries relevant fire safety labelling.

UPK3.3	**The purpose of a risk assessment in an upholstery context:**
	• to identify and reduce risk by:
	  o identifying potential risks
	  o determining likelihood of risk occurring
	  o evaluating the potential impact of risks and required control measures
	  o recording findings and implementing them, including completing risk assessment documentation
	  o regularly reviewing and updating risk assessment.

UPK3.4	**Characteristics, process, applications and limitations of materials used in upholstery:**
	• metals (for example, steel, stainless steel, copper, brass and aluminium):
	  o material characteristics (for example, durability, strength)
	  o applications (for example, producing hardware, providing structure)
	  o limitations (for example, differing resistance to corrosion, requirement for optimise tools and equipment, processability)
	  o understand the relative cost of metals
	• black and white and jute webbing:
	  o material characteristics (for example, tightly woven fabric; tensile strength; available in different widths and weights)
	  o processes (for example, interwoven and tacked or stapled to a frame)
	  o application (for example, providing the foundation for upholstery; using the material independently as a seat finish)

	○ limitations (for example, may stretch and lose shape over time; no elasticity so generally requires a spring system; puts a strain on the frame; may degrade over time) • rubber webbing: ○ material characteristics (for example, strong; elastic; springs are not necessary) ○ processes (for example, attached to frame with bespoke clips; can be stapled directly to the frame) ○ application (for example, providing the foundation for upholstery or a box cushion) ○ limitations (for example, more expensive product than jute) • polypropylene webbing: ○ material characteristics (for example, resists water and rot; springs are not necessary; cheap) ○ processes (for example, stapled or tacked to the frame ○ application (for example, providing the foundation for upholstery; ○ limitations (for example, prone to tear, environmental issues in production and disposal) • threads and twines, natural and manmade, waxed and unwaxed ○ material characteristics (for example, natural or synthetic; spun material; comes on spools; tensile strength; natural fibres are compostable) ○ processes (for example, machining; hand stitching; overlocking; buttoning; lashing) ○ applications (for example, connecting fabrics together; repairing materials; creating stitched edges in traditional upholstery) ○ limitations (for example, varying levels of quality; need to select the best specification for the function and use of the finished product; durability) ○ understand the relative cost of threads • springs and foundation systems: ○ material characteristics (for example, coil or zigzag; shock absorbing; can be held under tension or compression; available in different gauges or sizes) ○ processes (for example, lashing; creating sprung units) ○ applications (for example, providing increased comfort and support; providing kinetic interaction providing structure) ○ limitations (for example, bring additional weight to a product; have an elastic limit; time and cost implications) ○ understand the relative cost of springs and foundation systems • foams and filling materials: ○ material characteristics (for example, natural; synthetic; available in different densities and thicknesses; provides differing levels of compression, comfort and shape for the finished product) ○ processes (for example, bonding; foam cutting; stuffing and stitching) ○ applications (for example, creating different shapes on a product; increasing levels of comfort; covering frame edges for comfort)

	○ limitations (for example, fillings have different degrees of flammability; ethical and religious considerations) ○ understand the relative cost of foams and filling materials • covering materials (for example, leather and natural fabrics, man-made, vinyl): ○ material characteristics (for example, natural or synthetic; different weaves available; colour and pattern/grain; breathability; ease of cleaning; malleability; stretch; durability; surface texture; fabric fibre composition; fabric composition and its flame retardancy (for example, The Furniture and Furnishings (Fire Safety) Regulations); Martindale rub test (wear characteristics); discoloration in natural light) ○ processes (for example, upholstery; machine and hand stitching) ○ applications (for example, creating a support; securing other upholstery layers in place; adding a fire-retardant layer; creating a decorative surface) ○ limitations (for example, can be difficult to work with (for example, leather); size limitations; direction of fabric; varying degrees of cost and quality of material; can be prone to wear and tear or the effects of sunlight; ethical and religious considerations) ○ understand the relative cost of covering materials • plastics, (for example, acrylic, low- and high-density polythene, polystyrene sheets and balls): ○ material characteristics (for example, readily available; versatile; lightweight; mouldable; waterproof) ○ processes (for example, blow moulding; vacuum forming; injection moulding; rotational moulding) ○ applications (for example, producing outdoor products; making knock down fittings and components; providing an alternative to glass) ○ limitations (for example, processing costs; discolouration in natural light; can be affected by heat; sustainability – wasteful of finite resources if non-recyclable; non-biodegradable) ○ understand the relative cost of plastics • wood and timber, their application and use within upholstery frame construction and design (for example, hard and soft woods): ○ material characteristics (for example, natural characteristics; require processing before using; living material; patina may develop with age; potential to be processed) ○ processes (for example, cutting; jointing; carving; staining) ○ applications (for example, producing hardware, providing structure) ○ limitations (for example, can warp and twist; need to consider colour and grain variation when selecting; may have both natural defects and drying defects; sustainability (alternative materials may need to be sourced due to Forest Stewardship Council (FSC) regulations) ○ understand the relative cost of wood and timber

	• recycled/reclaimed materials:
	  o material characteristics (for example, inexpensive; sustainable)
	  o processes (for example, upcycling; process depends upon material used)
	  o applications (for example, constructing furniture; reusing materials as a basis for new items; providing components)
	  o limitations (for example, unpredictable in terms of quality and lifespan as wear and tear may limit viability of the material or require repair; indiscriminate sizes)
	  o understand the relative cost of recycled/reclaimed materials
	• fixings and fittings: (for example, staples, blued steel tacks, gimp pins, round and square decorative nails, nail strips, press studs, adhesives – spray, hot glues, fabric adhesive, Velcro, ties, buckles):
	  o applications (for example, attach filling materials and covering fabric to frame)
	  o understand the relative cost of fixtures and fittings
	• castors and glides:
	  o characteristics (for example, wheel or plate attached to bottom of larger object; made from different materials; may screw into object or be loose (glide)
	  o applications (for example, enables object to be moved more easily)
	• brackets:
	  o characteristics (for example, can be visible or concealed; commonly made from metal; removable and repositionable)
	  o applications (for example, can be used as a joint fixing (for example, L brackets)
	• hinges and stays:
	  o characteristics (for example, adds versatility to the design; can be visible or concealed
	  o applications (for example, creates movement between two components; allows the weight of a component to be supported; improves end-user experience; adds different functionality to the product)
	• nuts and bolts:
	  o characteristics (for example, can add a decorative element to a piece; add strength to the connected components; often used in conjunction with a washer to increase surface area and to enhance strength; available in standard sizes)
	  o applications (for example, primarily used for connecting components; rely on an internal and external thread to lock fasteners together; can be used with wood, plastic, glass or metal
	• springs:
	  o characteristics (for example, available in different types used to create movement in a piece; usually made from sprung steel; available in standard sizes)
	  o applications (for example, can be used with wood, plastic or metal).

UPK3.5	**The characteristics and use of different types of filling materials:**
	• hairs and fibres (for example, horse, cattle tail, hog hair and coir fibre):
	  o first and second stuffing in traditional upholstery
	  o creates foundation layers
	• wadding (for example, cotton felt, wool felt, wool, viscose, polyester and skin wadding):
	  o adds additional comfort to base layers
	  o smooths out imperfections on the stuffing surface
	  o replaces hair and fibre stuffing
	• polyurethane (PU) foam:
	  o used independently or in conjunction with springs on top of a webbing base
	  o layered to create desired 3D shape
	  o used for all forms of seating (for example, benches, commercial booths)
	  o used to pad a frame (for example, chair arms)
	• synthetic fibres (for example, polyester wadding):
	  o can be used as additional padding over base layers
	  o loose fibre can be used to fill cushion pads.

UPK3.6	**The application of upholstery processes and techniques:**
	• hand cutting:
	  o sawing
	  o cutting patterns, templates and materials
	• machine cutting:
	  o sawing
	  o routing
	  o CNC cutting
	  o foam cutting
	• joining:
	  o traditional joinery (for example, mitre joint)
	  o knock down joinery (for example, using fixture and fittings)
	  o dowelling (for example, dowel joints)
	  o sewing
	  o stapling and tacking
	• joining methods:
	  o soldering
	  o sewing
	  o stapling and tacking

	• pattern/template making and cutting out materials:
	  ○ draw up patterns/cutting lists
	  ○ make templates
	  ○ lay planning
	  ○ cutting materials
	• pattern matching:
	  ○ pattern repeat – planning and cutting
	  ○ pinning
	  ○ sewing
	  ○ selvedge
	  ○ lay planning
	• sewing and cording upholstery, applications and use:
	  ○ hand stitching:
	  – blind stitch
	  – top stitch
	  – slip stitch
	  – blanket stitch (for example, feather edge)
	  – edge stitching
	  ○ machine stitching:
	  – embroidery
	  – straight stitch
	  – overlocking or zig zag stitch
	  ○ gluing:
	  – heat
	  – hot melt
	  – contact adhesion
	  – spray
	  ○ preparing upholstery frames:
	  – stabilising and repairing
	  – stripping and/or sanding
	  – reviving or repolishing
	  – waxing
	  – painting
	  ○ foundations building:
	  – webbing
	  – springing
	  – tying
	  – stitching
	  – stuffing
	  ○ knots and ties:
	  – slip knot
	  – half hitch and hitch
	  – whipping
	  – stuffing tie
	  – bridle tie

	○ skiving: – thinning or splitting leather ○ buttoning: – deep – shallow – tufting – Van Dyke method – button pressing with the use of blanks and loops ○ trimming: – braids, gimp or fringe – banding – decorative nails – nail strip – single or double piping.
UPK3.7	**The purpose of different finishing preparation methods:** • sanding: ○ purpose: – flattens the surface, which may improve the longevity of the finish – removes fine dust particles (denibbing) in between coats of a finish – provides a key for the adhesion of the finish – removes tool marks – brings out the brightness and finish of a material – dulls down a finish to provide a matt or semi-matt finish • distressing: ○ purpose: – adds age or character to a piece – reduces transparency of glass or clear plastic – alters surface finish • interlining: ○ purpose: – shapes and/or reduces the stress on the top fabric by providing a calico layer – provides additional wadding to add a comfort layer – allows the product to meet British fire regulations when using a fire-retardant barrier cloth.
UPK3.8	**The application and limitations of different finishes:** • varnish: ○ application (for example, providing internal and external finishes to a product) ○ limitations (for example, needs to be applied in thin coats; discolours over time) • lacquer: ○ application (for example, providing a hardwearing finish on a surface; used on wood or metal; primarily used for indoor furniture) ○ limitations (for example, harder to repair than more traditional finishes; can be hazardous to work with)

	• sealers and primers:
	  ○ application (for example, quantity of topcoat required as a preparatory layer)
	  ○ limitations (for example, adds extra time to the finishing process; not suitable as a hardwearing final finish; can be hazardous to work with)
	• waxes:
	  ○ application (for example, providing a protective barrier; reviving old furniture; 'feeding' and restoring leather)
	  ○ limitations (for example, can be difficult to remove from intricate detail; not hardwearing, requires occasional maintenance and reapplication; ineffective as a single finish)
	• oils:
	  ○ application (for example, enhancing the grain of hardwoods; provides UV and outdoor protection)
	  ○ limitations (for example, less hardwearing than lacquer; requires occasional maintenance and reapplication; requires reasonable ventilation)
	• shellac polish/French polish:
	  ○ application (for example, acting as a sealer and as a final finish)
	  ○ limitations (for example, requires technical expertise to create a high-quality French polish finish; time consuming; requires specialist tools)
	• paint finishes:
	  ○ application (for example, providing colour and decorative patterns to a final product; provides protection from corrosion)
	  ○ limitations (for example, durability depends upon the type of paint used and the quality of the application; time consuming to remove; can crack or fade over time)
	• gilding:
	  ○ application (for example, creating a fine metal finish)
	  ○ limitations (for example, materials may be expensive; difficult to apply)
	• stains and dyes:
	  ○ application (for example, changing the colour of the final surface)
	  ○ limitations (for example, hard to remove as it is soaked into the material; poor colour fastness; staining does not provide a durable finish).

UPK3.9	**The application of different chemicals for altering surface details of materials:**
	• ammonia fuming:
	  ○ darkening the wood grain
	• oxidising using chemical solutions
	  ○ can permanently darken the wood grain
	• bleaching:
	  ○ removing stains or wood colour
	  ○ lightening the colour of the wood
	• mild acids:
	  ○ creating different coloured effects on metals

	• paint stripper (dichloromethane) and soda blasting • removing old paints and varnishes to return material to its original state.

UPK3.10	**The application and safe and effective use of measuring and marking tools:**
	• tape measure:
	  ○ safe application (for example, measuring length up to approximately 8m; check for damage in the metal; retract slowly; keep away from moving power tools or machinery).
	• set square (for example, right angle, adjustable or try-square)
	  ○ safe application (for example, drawing or marking out perpendicular lines on materials; drawing and marking out 90º, 60º, 45º, 30º accurately; keep clean and rust free; use according to manufacturers' instructions)
	• sliding bevel:
	  ○ safe application (for example, duplicating and transferring an atypical angle; drawing and marking out atypical angles; holds the bevel and workpiece correctly and securely to ensure accuracy; keep clean and rust free)
	• callipers:
	  ○ safe application (for example, checking the thickness, depth or width of a material or aperture, in mm and inches; transferring measurement; ensure material is clean prior to measurement; ensure callipers are at zero)
	• marking gauge, mortice gauge, cutting gauge:
	  ○ safe application (for example, scoring or drawing a precise line in preparation for cutting, usually parallel to an edge; make sure the material to be marked is adequately gripped; store safely when not in use to avoid damage; take appropriate care with spur or knife edge)
	• steel rule:
	  ○ safe application (for example, providing a more precise measurement than a tape measure; drawing a straight line over a curved surface; grip the workpiece adequately before using rule; ensure the rule is laid flat on the workpiece)
	• straight edge:
	  ○ safe application (for example, checking the flatness of a surface; hold firmly when using equipment; grip the workpiece adequately; keep away from heat, electrical sources and moving machinery or tools)
	• spirit level:
	  ○ safe application (for example, checking whether a surface is level; grip the workpiece adequately; keep clean and rust free; check for accuracy regularly)
	• laser measure:
	  ○ safe application (for example, measuring volume, length and distance; measuring hard to reach places; use according to manufacturer's instructions; do not use where user or others could look at the laser beam to prevent eye injury)

	• marking knife/scriber: ○ safe application (for example, marking fine lines on metal or plastic surfaces before cutting and machining; accessing difficult to reach parts of a workpiece; if using a template, clamp to workpiece to prevent movement; after use, brush clean of any dirt).

UPK3.11	**The application and safe and effective use of hand cutting tools:**
	• plane:
	  ○ safe application (for example, flattening wooden surfaces; grip the material adequately; pay attention to the sharp blade)
	• saw (for example, tenon, coping, hack and piercing):
	  ○ safe application (for example, producing a finer kerf compared to a machine saw; cutting smaller pieces of material; making smaller cuts over a shorter distance; wear appropriate Personal Protection Equipment (PPE); keep fingers away from the blade when cutting; use appropriate size saw for the task)
	• chisel:
	  ○ safe application (for example, shaping and carving materials; wear appropriate Personal Protection Equipment (PPE); never chip towards the face; keep hands behind edge)
	• scissors or shears:
	  ○ safe application (for example, cutting material accurately and easily; follow manufacturer's instructions; ensure the material is secured to prevent movement whilst cutting and to maintain accuracy; regularly sharpen blades).

UPK3.12	**The application and safe and effective use of the following joining tools:**
	• needles (for example, bayonet, buttoning, curved, spring):
	  ○ application:
	  – mattress needle – bringing stuffing layers together
	  – spring needle – tying springs to webbing
	  – curved needle – slip stitching and stuffing ties
	  – buttoning needle – double ended for deep and shallow buttoning through stuffing and foam layers
	  – bayonet needle – doubled-ended bayonet point needle that helps to cut through traditional hair and fibre filling materials
	  ○ safe and effective use (for example, ensure that the appropriate needle is chosen for the task; wear appropriate eye protection; take caution when passing the needle through the stuffing layers; awareness of surroundings and other people)
	• regulators:
	  ○ application:
	  – distributing hair stuffing evenly
	  – safe and effective use (for example, choose length of regulator appropriate to the task; store safely when not in use; awareness of surroundings and other people).

UPK3.13	**The application and safe and effective use of the following striking tools:**
	• hammers (for example, cross pein hammer, pin/pattern, claw, magnetic):
	  ○ safe application (for example, driving nails into material; pounding or marking material; inserting or extracting fixing; grip handle securely)
	• nail punch:
	  ○ safe application (for example, driving nail below a surface to create a smooth finished look; marking material prior to drilling; wear appropriate Personal Protection Equipment (PPE); ensure punch is in good working order)
	• mallet:
	  ○ safe application (for example, driving chisel into material; providing softer impact on the striking material than a metal hammer; grip the mallet close to the head of the tool; when using, strike away from the body)
	• press:
	  ○ safe application (for example, fastening fittings or fixings to another material; wear appropriate PPE; keep hands away from striking edge).

UPK3.14	**The application and safe and effective use of the following holding tools:**
	• clamp (for example, G clamp, sash clamp, band clamp):
	  ○ application (for example, holding material securely; providing pressure during the gluing process)
	  ○ safe and effective use (for example, use appropriately sized clamp for the task)
	• vice (for example, bench vice, machine vice, engineer's vice, carvers' chops):
	  ○ application (for example, holding material securely whilst drilling and processing materials)
	  ○ safe and effective use (for example, be aware of surroundings and keep fingers clear of the vice)
	• stretcher (for example, leather or canvas):
	  ○ application (for example, increasing the tension of a material over a frame; acting as a lever when a strong pull is required)
	  ○ safe and effective use (for example, ensure firm grip of the stretcher before using; ensure there is sufficient material in the grip; ensure the securing tool is close to hand)
	• webbing stretcher:
	  ○ application (for example, putting the webbing under tension before securing to the frame)
	  ○ safe and effective use (for example, ensures the stretcher is securely held against the frame before putting webbing under tension; keep fingers away from sharp teeth if using a spiked webbing stretcher)

	• pliers (for example, long nose, groove lock):
	  ○ application (for example, gripping, pulling, twisting or cutting materials)
	  ○ safe and effective use (for example, use appropriate pliers for the task; wear appropriate Personal Protection Equipment (PPE) whilst cutting or pulling; pull away from the body).

UPK3.15	**The application and safe and effective use of the following machine tools:**
	• drill/driver:
	  ○ application (for example, drilling round holes in material; driving in or removing a screw or bolt)
	  ○ effective use (for example, use correct drill bit for the material being drilled; ensure the drill bit is sharp)
	• jigsaw:
	  ○ application (for example, cutting material in a variety of ways; cutting wood, metal and plastic)
	  ○ effective use (for example, use the correct blade for the material being cut, the finish required and the shape of the cut)
	• fixed and portable sanders (for example, orbital, detail, belt):
	  ○ application (for example, removing material and providing a smooth finish; polishing and cleaning a surface; roughening a surface in preparation for a finish)
	  ○ effective use (for example, ensure adequate ventilation)
	• hand-held router:
	  ○ application (for example, creating different edge profiles; cutting grooves or rebates; creating flush trim edges; creating curved work)
	  ○ effective use (for example, ensure the router cutting bit is sharp; cut against the direction of the rotation of the router cutting bit)
	• table saw:
	  ○ application (for example, dimensioning sheet material; ripping; creating angled cuts by changing the blade angle; making long cuts)
	  ○ effective use (for example, ensure riving knife is in place; ensure there is adequate clearance from the ripping fence when cross cutting; use pushing sticks or power feed to push workpiece across the cutter; wait for the blade to stop before removing any offcuts from the table; isolate the machine before changing blades)
	• router table:
	  ○ application (for example, increasing the versatility of a handheld router)
	  ○ effective use (for example, cut against the direction of rotation of the router cutting bit; use push sticks or feather boards to move workpiece across the cutter; always pass the workpiece across the front of the cutter, never between the cutter and the fence)
	• sewing machine:
	  ○ application (for example, mechanically attaching multiple pieces of fabric together using thread)
	  ○ effective use (for example, ensure machine is well maintained and needles are changed regularly)

	• overlocker:
	  ○ application (for example, attaching multiple pieces of fabric together; creating an edge, hem or seam on a fabric; preventing fabric fraying)
	  ○ effective use (for example, ensure machine is well maintained and needles are changed regularly)
	• buttoning machine:
	  ○ application (for example, fastening fittings or fixings to another material; creating buttons using buttoning blanks)
	  ○ effective use (for example, keep hands away from presser and cutter; secure tooling and workpiece to bench before use)
	• foam cutter/band knife cutting machine:
	  ○ application (for example, cutting material accurately with relatively little mess)
	  ○ effective use (for example, ensure the material to be cut is on a suitable surface to reduce movement; secure the material to prevent movement whilst cutting and to maintain accuracy; sharpen and replace blades regularly)
	• compressor:
	  ○ application (for example, operating pneumatic staples, nail gun, drill; paint and varnish spraying)
	  ○ effective use (for example, empty after use to avoid corrosion)
	• safe use of all machine tools (for example, always follow manufacturers' instructions; keep fingers away from blades/moving parts; ensure the machine guards are in place prior to use; do not wear loose clothing; tie back long hair; clamp materials securely; use efficient dust extraction when required).

UPK3.16	**The application and safe and effective use of the following gripping tools:** • pincers, tack and staple lifters: ○ safe and effective use (for example, removing tacks and staples from an upholstered frame; wear appropriate Personal Protection Equipment (PPE); using the appropriate tool for the fixing).

UPK3.17	**Costing**
	• knowledge of costings, including:
	  ○ consideration of time
	  ○ cost of materials
	  ○ route to market
	  ○ difference between costing and pricing
	• the influence of costs on pricing:
	  ○ outsourcing
	• knowledge of costings of work completed including:
	  ○ cost of materials, tools and equipment
	  ○ cost of maintenance of tools and equipment
	  ○ outsourcing
	  ○ consideration of time (making)

	• difference between costing and pricing • difference between estimates and quotes.
UPK3.18	**The importance of maintaining hand tools, power tools, plant and equipment, and immediate work environment:** • reduces the likelihood of injury • reduces costs • maintains efficiency of hand tools • ensures compliance with legislation and regulations.
UPK3.19	**The principles of maintaining, calibrating and cleaning hand tools, power tools, plant and equipment:** • working within own limits of competence • checking calibration documentation where applicable and recalibrating as required • following manufacturers' instructions • using appropriate cleaning materials • maintaining cleaning and servicing equipment records • reporting faulty machinery or equipment to an approved technician or manufacturer • safely disposing of equipment that cannot be repaired.
UPK3.20	**The sustainability and ethical factors to consider when choosing materials, methods, processes and techniques:** • environmental impact • socio-economic impact • human welfare • chain of custody (CoC) – validate the origin and journey of materials used in design of product • production methods • use of natural or synthetic materials • repurposing of materials • circular design – design model to minimise impact on the environment.
UPK3.21	**Methods to ensure that raw materials are ethically and sustainably sourced:** • choosing a reputable supplier • using raw materials with industry recognised certification (for example, Fairtrade fabric FSC for wood, Fairtrade fabric and Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)) • choosing local rather than national or international suppliers • using a transparent supply chain.

UPK3.22	**The principles of waste management:**
	• refuse:
	  ○ optimise waste by refusing to use non-recyclable products or environmentally unfriendly suppliers
	• reduce:
	  ○ reducing use of harmful chemicals, non-recyclable materials and wasteful processes
	• reuse:
	  ○ reusing materials where possible as opposed to disposal
	• repurpose:
	  ○ adapting product or material so it can be used for a different purpose
	• recycle:
	  ○ ensuring all resources are recycled where possible if they cannot be reused or repurposed.

UPK3.23	**The importance of reducing waste:** • lowers operating costs • contributes to a more sustainable business model • potential to produce more products from materials • reduces unnecessary waste to landfill • conservation of resources • climate change.
UPK3.24	**The types of methods used to mitigate and reuse waste where options to reduce have been exhausted:** • optimising usage of materials using lay planning • using waste materials for packaging • reusing materials • repurposing of materials • recycling waste where appropriate.

UPK3.25	**The types of roles within the making process and their purpose:**
	• designer:
	  ○ creates furniture or interior concept
	  ○ creates sketches, drawings or renderings
	• trade supplier:
	  ○ provides materials and components to tradespeople, often in larger quantities and usually at a lower cost than retail
	• manufacturer/fabricator:
	  ○ makes components for the design
	  ○ assembles components for the design
	• specialist service provider:
	  ○ provides a skillset necessary for the completion of the product
	  ○ provides a more cost-effective service not available in-house

	• technician:
	  ○ maintains the smooth operation of the work environment
	  ○ completes safety checks and keeps accurate records of maintenance, accidents and incidents
	• apprentice:
	  ○ provides support to the qualified crafts person
	  ○ develops first-hand industry experience
	  ○ learns both at the place of work and in conjunction with a optimise apprenticeship scheme.

Performance Outcome 4: Use the selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the design

What skills do students need to demonstrate?

UPS4.1 Create required documentation for realisation of the design brief:
• produce specification based on the approved design, using notation where appropriate
• produce working drawings, to include:
  ○ presentation drawings
  ○ cutting list
  ○ process list
  ○ layout diagram
  ○ templates, jigs.
• use standard symbols and technical language correctly on all documentation
• use correct conversion factor and formulae
• use relevant digital tools
(D1, D3, E1, E3, M3, M4, M6, M7)

UPS4.2 Determine required materials to realise the design brief: • make reasonable approximations to identify quantities required • identify suitable suppliers • establish availability of materials • establish lead times for supply of materials (M2)
UPS4.3 Prepare materials and workspace: • ensure that correct materials and tools are available and ready for use • keep work area clean and tidy • inspect materials for flaws or faults and respond appropriately • prepare the materials, where appropriate • clean and store tools appropriately after use
UPS4.4 Select and utilise tools and machinery to realise the final design: • select appropriate tools or machinery according to the specification • set up or prepare tools or machinery according to manufacturers' instructions • ensure tools or machinery are clean and ready for use • ensure blades and cutting bits are sharp • wear appropriate Personal Protection Equipment (PPE) for the tool, machinery or material • adjust tools or equipment to suit different materials and test on an off cut, if appropriate

UPS4.5 Measure components accurately:

- refer to working drawings
- use appropriate measuring tools for the task
- ensure measuring tool and workpiece are clean
- calibrate measuring equipment
- ensure workpiece is correctly held to ensure an accurate reading
- use correct units
- double check measurements

(M1, M2)

UPS4.6 Apply selected processes and techniques to realise ideas by making and finishing the items within defined parameters:

- consider relevant surface decoration/treatment required to be applied to materials.
- create final shape of the upholstered piece:
  - select filling according to the specification
  - build up layers according to traditional or modern methods
  - attach to the frame
- create fabric components for top cover of upholstery:
  - create templates, if required
  - measure and mark the final material according to fabric layout diagram/cutting list or by using a template ensuring seam allowance is added
  - use materials mindfully and efficiently to optimise waste
  - cut components accurately, following the marked lines using appropriate cutting tool
  - place components on the upholstered frame to confirm fit
- prepare fabric components for sewing:
  - overlock fabric edges, if required
  - pin components together, right side to right side, with appropriate seam allowance
  - mark seam allowance on the wrong side of the fabric as a guide for the sewing machine needles and for accuracy
  - insert piping
  - insert zips
  - machine layers together
- tie off threads to secure stitch line

(M1, M2)

UPS4.7 Work safely in workshop when performing processes and techniques:

- adhere with workshop safety rules and procedures
- assess problems and potential dangers:
  - follow risk assessment processes
  - record appropriately
  - escalate if required.
- keep work area clean and tidy
- use equipment appropriately to suppliers'/manufacturers' instructions
- select an appropriate space to carry out tasks
- use resources safely and efficiently, and report depleted resources, where appropriate
- take action to remedy wear of tools whilst in use

(E3)

UPS4.8 Create templates, lay and cut fabric components:

- draw up and cut out templates
- draw up lay plan prior to cutting material

UPS4.9 Manage waste safely and ecologically:

- choose appropriate waste management method
- store usable excess material appropriately and safely
- dispose of waste materials safely, according to manufacturers' instructions or workshop policies and procedures

UPS4.10 Detect flaws/faults in materials and respond appropriately:

- make decisions to rectify flaws before proceeding to next stage of making

UPS4.11 Maintain a clean and clear workspace.

UPS4.12 Package product for safe delivery to client:

- photograph product
- ensure all components for shipping are gathered
- choose appropriate packaging for shipping products
- temporarily secure moveable parts
- protect delicate or sharp edges and corners
- ensure adequate packaging is applied to prevent breakages

UPS4.13 Store and dispose of materials safely and ecologically:

- reuse and repurpose scrap materials
- store usable excess material appropriately and safely
- dispose of waste materials safely, according to manufacturers' instructions or workshop policies and procedures

What underpinning knowledge do students need?	

UPK4.1	**The features of specifications and working drawings:**
	• specification:
	  ○ purpose of the item
	  ○ overview of materials used
	  ○ final dimensions of the item
	  ○ finishes
	• working drawings:
	  ○ formal drawings:
	  – detailed material specifications
	  ○ working exploded views, sectional views, auxiliary views:
	  – units of measurement
	  – joining techniques
	  – assembly instructions
	  ○ cutting list, including annotations
	  ○ process list, including:
	  – project schedule
	  – instructions for the order of production of components
	  – phases of production for each component in relation to the other
	  – positioning of components on the material to maximise its use
	  ○ templates and jigs:
	  – deep buttoning
	  – capping
	  – front facings
	  – cutting joints
	  – edge profiling
	  ○ upholstery build-up sheet:
	  – cut away diagram of the different layers of upholstery from frame to top cover
	  – attachment of layers to the frame.

UPK4.2	**The importance of accuracy, acceptable tolerances and the ability to produce within defined parameters:** • lay planning to ensure effective use of material including any pattern matching • joints fit accurately together • produces more aesthetically pleasing results • manages budget effectively • assures correct orientation of grain • provides economical use of the material.

UPK4.3	**The principles of measuring accurately:** • using the correct conversion factors and units to determine size and scale • using the correct measuring and marking tools for the task • identifying acceptable tolerances • double-checking measurements before cutting.
UPK4.4	The process for troubleshooting potential problems: • identifying faults and flaws and defining the problem • investigating and examining possible causes • researching alternative solutions • selecting a preferred solution • implementing the solution • reflecting on the changes made and recording changes for future reference.

UPK4.5	**Common faults and flaws in materials and possible solutions:**
	• knots:
	  o adjusting the cut to accept the knot
	  o using a different section of material
	• misprint fabric, flaw, fault lines:
	  o adjusting cut to accept the flaws
	  o using different section of material
	• fabric faults and flaws:
	  o using a new section of material to work around the flaw
	  o replacing fabric.

UPK4.6	**The responsibilities of the employee to ensure compliance with health and safety and other relevant legislation:** • wear appropriate personal protective equipment (PPE) • follow workplace systems, processes and procedures • contribute to and follow risk assessments • complete required training, for example Furniture & Furnishings (Fire)(Safety) Regulations • carry out tasks and use equipment that the employee is trained to undertake, reporting dangerous occurrences or damaged equipment to the employer.

UPK4.7	**The purpose of personal protective equipment (PPE) when working with materials in different workshops:**
	• eye protection:
	  o prevent the passage of debris, chips, particles and dust into the eyes produced when using power and hand tools
	  o protect against splashes when working with chemicals or hazardous liquids
	• ear plugs/defenders:
	  o protect ears from excessive noise in work area
	• nose and mouth protection:
	  o disposable masks

	• hand and arm protection:
	  ○ gloves/disposable single-use gloves/gauntlets:
	  – prevent against skin irritation when handling materials
	  – provide prevention of absorption of harmful substances through the skin
	  – protect against minor puncture wounds, cuts or abrasions when working with tools and materials
	• body protection:
	  ○ overalls/apron:
	  – protect clothing from damage or staining
	  – protect the body from splashes and debris
	• foot protection:
	  ○ safety boots and shoes:
	  – protect against risk of injury from falling or rolling objects.

UPK4.8	**The advantages and limitations of joints and joining techniques used in upholstery:**
	• tacks:
	  ○ advantages:
	  – used for traditional upholstery
	  – available in a variety of sizes and finishes
	  – easily removed
	  – minimal equipment required
	  – reusable
	  ○ limitations:
	  – may cause damage to the frame
	  – prone to corrosion
	• staples:
	  ○ advantages:
	  – quick and easy to use
	  – minimally invasive and used for conservation of period pieces
	  – available in a variety of sizes and finishes
	  ○ limitations:
	  – may be difficult to remove
	  – single use
	  – prone to corrosion
	• screws:
	  ○ advantages:
	  – pulls the joint together
	  – greater tensile strength than pins, nails, tacks and staples
	  – easy to remove
	  – available in a variety of sizes and finishes

	○ limitations: – visible within the material – may require additional labour time to install – thread alone may not be sufficient to bear the load – screws should not be reused as repeated use can damage the screw head • bonding/gluing: ○ advantages: – easy to use – relatively inexpensive – allows for repositioning during glue open time – allows for a clean finish – may be used in conjunction with other joining methods to add extra strength ○ limitations: – bond not as strong as other joining methods – may mark material if excess is not removed immediately – some glues have a very limited open time – may cause skin irritation.
UPK4.9	**The process used in traditional upholstery and the materials and tools required:** • suspension: ○ springs: – hessian layer attached to frame base using hammer and tacks – attach sprung unit using framing nails – attach zigzag springs using spring clips. – attach coil springs using natural fibre twines or hog rings and then 4-way lashed down under compression before the padding layer is added. Eight-way lashing is required on springs more than 6” deep ○ webbing: – jute, black and white and rubber – intertwining strips of webbing and attaching to the frame to form a grid – attached to the frame under tension using a webbing stretcher – if coil springs are used, they are stitched to the webbing using natural fibre twines or hog rings and then 4-way lashed down under compression before the padding layer is added. Eight-way lashing is required on springs more than 6” deep ○ base layering: – hessian, spring canvas or scrim layer attached over the springs using hammer and tacks • stuffing: ○ tacking: – tacks used to temporarily hold upholstery layers in place – tacks driven through the upholstery layers to permanently hold them in place

	○ upholstery layering: – animal hair or natural fibre first stuffing, held in place using bridle ties – hessian or scrim added to form shape – use a regulator to manoeuvre the fibre first stuffing to create a firm stitched edge and check uniformity of fibres. – apply blind and top stitching to form a firm edge – second hair stuffing held in place with bridle ties – apply skin wadding – apply calico layer stretched and hand stitched or tacked in place • top covering: ○ attaches fabric layer using appropriate tension to create a smooth and firm finish ○ identifies appropriate cuts in the fabric to fit around the frame ○ secured with hand stitching, tacks or nails • stitched edging: ○ secures the stuffing in place by the creation of a firm edge using different hand stitches ○ blind stitch – first rows of stitching to pull and secure the stuffing to the edge of the frame ○ top stitch – creates a tight 'pie crust' roll at the top edge of a stitched pad • buttoning: ○ buttons handstitched in place using buttoning or tufting needle through stuffing layers • decoration and finishing: ○ edging and trimming: – top stitch – stitched by hand using double ended needle and built up to form rigid shape and corners – braided or decorative nails ○ dust cloth: – tacked in place.
UPK4.10	**Materials and tools used in modern upholstery:** • suspension: ○ springs: – synthetic webbing – spring unit can be attached to the frame using a nail gun and metal brackets • stuffing: ○ uses synthetic or natural material ○ foam filling cut to size using foam cutter producing sharp angles for corner definition ○ can be attached to base layer using adhesive

	• top layering:
	  o fabric shapes machine stitched
	  o overlocker used for fabric edges
	  o fabric applied to frame using a staple gun
	• buttoning:
	  o buttoning machine used to attach buttons to an upholstered piece
	• decoration and finishing:
	  o surface decoration:
	  – embroidery
	  – printing
	  o piping and edging:
	  – piping (single and double) for sewing into seams and for covering tacks and staples
	  – braid can be glued in place using a glue gun
	  – nail strip applied with decorative nails
	  – decorative nails applied using a nail gun
	  o base cloth:
	  – held in position using a staple gun
	  o varnish or paint applications:
	  – can be applied with use of a spray gun.

UPK4.11	**Factors to consider when packing products for delivery to the client:**
	• packing product safely:
	  o restricting movement
	  o lessens risk of damage
	  o protects from weather damage
	• choice of packing materials:
	  o wooden crates
	  o foam
	  o cardboard
	  o air-filled packaging
	  o polythene furniture bags
	• sustainability of packaging materials:
	  o reusable
	  o recyclable
	  o biodegradable.

Performance Outcome 5: Review and evaluate the development process at each stage against the original brief or proposition to refine production methods and product

What skills do students need to demonstrate?

UPS5.1 Evaluate the extent to which the finished product meets the design brief:
• apply success criteria to evaluate the finished product:
  ○ determine if the product was completed within agreed timescales
  ○ identify variance in the expenditure against set budget
  ○ determine quality of the finished product:
  – fitness for purpose
  – design interpretation/meets client requirements
  – aesthetic appeal
  – sustainability of the design process and finished product
  ○ feedback from client was responded to
  ○ end-user (client) satisfaction
  ○ comparison of evaluation findings against student design
  ○ reflection on outcome and future developments
  ○ record and document evaluation
(D5, E1, E3, E4, E5, M2, M5, M6, M8, M9)

UPS5.2 Review and assess the final outcome against the production schedule:
• apply reflective practice to review the final outcome:
  ○ review efficiency and waste with considerations towards:
• selection and application of:
  ○ raw materials
  ○ processes and techniques
  ○ tools and equipment
  – quantities of materials ordered
  – planning and use of time
• ethical and sustainable approaches to the design process
• review the quality with consideration towards:
  ○ suitability of raw materials
  ○ design decisions
  ○ processes and techniques employed to achieve desired effect
  ○ tools and equipment applied to achieve desired outcome
  ○ effectiveness of quality assurance tests and processes
• cost effectiveness with consideration towards:
  ○ sourcing and quality of raw materials
  ○ efficient planning and project management
• compare reflective practice findings against production schedule
• record and document findings
(D3, D4, E1, E3, E4, E5, M2, M9, M10)

UPS5.3 Establish if design brief has been achieved and ascertain areas for future improvement:

- implement appropriate evaluation methods with the end user to determine:
  - levels of satisfaction
  - fitness for purpose
  - areas for improvement
  - evaluation methods, may include:
    - customer satisfaction survey
    - focus groups
    - user testing
- record and document evaluation findings
- draw conclusions and express opinions using evaluation findings to identify areas for future improvement

(D3, D4, D5, E1, E2, E4, E5, E6, M5, M6, M10)

UPS5.4 Reflect on outcome, update digital portfolio and consider actions for future development:

- reflect, record and document findings of reflective practice including:
  - examples of good practice
  - identified improvements to design processes
  - areas for future improvement
  - ideas for future innovation

(E3, E4, E5, D2, D4)

What underpinning knowledge do students need?	

UPK5.1	**How to assess the final product against the original brief and production plan:**
	• success criteria:
	  ○ timescales – completed on time to agreed deadline
	  ○ budget – completed within set and agreed budget
	  ○ quality:
	  – raw materials used
	  – processes and techniques applied
	  – tools and equipment used
	  – design interpretation
	  ○ fitness for purpose
	• meeting success criteria
	  ○ completed on time
	  ○ completed within set budget
	  ○ dimensions are suitable
	  ○ fitness for purpose (ergonomics, waterproof), meets customer requirements
	  ○ aesthetically appealing
	  ○ feedback from client was responded to

	• meets end-user requirements:
	  o customer satisfaction survey
	  o focus groups
	  o user testing
	  o meets client's satisfaction:
	  – review client feedback from each stage of design
	  – final client interview
	  – client satisfaction survey.

UPK5.2	**How reflective practice is used within the design process to inform decision making, for example revisions, justifications, choices:**
	• reflective documents – records of ideas, learning, feelings, observations, thoughts and emotions:
	  o provides rationale for decision-making process
	  o challenges own decision-making process
	  o considers ideas not taken forward to inform further development or revisions
	  o reviews assumptions that may later be tested
	  o remains open-minded to new and different approaches
	• peer groups – discussion and feedback with colleagues or other practitioners:
	  o provides fresh insight into decision making
	  o challenge own assumptions
	  o offers benefits of others' experiences and sharing good practice
	• formative evaluation – ongoing reflection throughout the process:
	  o reviews for suitability of selected processes, materials, tools and techniques at each stage of design
	  o provides opportunity for timely revision
	  o implements feedback from client, customer and end user at each stage
	• summative evaluation – final reflection providing unbiased and evidence-based conclusions:
	  o reviews the outcome of decisions and choices
	  o identifies possible improvements
	  o identifies good practice.

UPK5.3	**How to use reflective practice to plan progress and future development:**
	• use and document reflective practice to:
	  o identify improvements in processes and techniques used to be applied in future developments
	  o highlight good practice demonstrated that can be shared and applied in other projects
	  o improve the quality of finished product by reviewing at milestones throughout the process
	  o encourage innovation and experimentation
	  o reduce the potential for mistakes by understanding each step in the process
	  o improve the efficiency of design process

	○ identify the suitability of tools and techniques to achieve the required outcome ○ increase understanding of the concept to finished product process ○ develop confidence with the application of repeated processes.
UPK5.4	**How to apply knowledge gained to future projects:** • plan: ○ plan required improvements • do: ○ optimise processes • review: ○ analyse results ○ review costs • act: ○ review the solution ○ capture data at each stage of production.

Scheme of Assessment: Furniture Maker (Upholsterer)

There are two task assessments for this Occupational Specialism.

Both tasks are completed during a window set by Pearson, during which Providers schedule supervised assessment sessions. Task 1 activity 1 is timetabled by Pearson.

Task 1 is an extended 'Design and Make' task that consists of nine substantive activities.

Task 2 is a Make to a specification task that consists of substantive activities.

These tasks are important to ensure students can demonstrate threshold competence and are able to evidence all the skills required by the Performance Outcomes.

Occupational Specialism Task 1 – Design and Make
Internally assessed, externally moderated project: 69 hours and 50 minutes **192 marks**
Performance Outcomes In this task students will: **PO1** – Analyse, interpret and respond to a creative proposition or a brief taking on board purpose and end user **PO2** – Create designs to realise the brief **PO3** – Research and evaluate materials, processes, tools and techniques to determine suitability to realise the design **PO4** – Use the selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the design **PO5** – Review and evaluate the development process at each stage against the original brief or proposition to refine production methods and product.
Assessment overview Task 1 is made up of nine substantive activities. • Activity 1: Interpret the brief and conduct research • Activity 2: Upholstery ideas and experimentation with 2D/3D upholstery materials, techniques and processes • Activity 3: Presentation, feedback and refinement of ideas • Activity 4: Pitch preparation • Activity 5: Pitch presentation • Activity 6: Final design testing phase • Activity 7: Produce final technical drawings, final costings and final production schedule • Activity 8: Create the final upholstered piece • Activity 9: Evaluation Students respond to a given scenario to complete task 1. They are assessed on their application of the skills listed for the Performance Outcomes.

Students are not assessed against specific 'knowledge' outcomes but are expected to draw on and apply related knowledge to ensure appropriate outcomes when applying the skills in response to an assessment scenario.

Students undertake the assessment under a combination of supervised and controlled conditions.

The assessment takes place over multiple sessions, up to a combined duration of 67 hours and 50 minutes.

The task outcomes consist of a physical item or items that have been designed and made, supported by a portfolio of evidence submitted electronically.

This task is set by Pearson and marked by the provider. Pearson will externally moderate the marks.

Occupational Specialism Task 2 – Make to a specification

Internally assessed, externally moderated task: 22 hours and 30 minutes

90 marks

Performance Outcomes

In task 2 students will:

PO4 – Use the selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the design

PO5 – Review and evaluate the development process at each stage against the original brief or proposition to refine production methods and product.

Assessment overview

Task 2 is made up of two substantive activities.

- Activity 1: Upholster a headboard
- Activity 2: Evaluation

Some activities have sub-activities within them.

Students respond to a given scenario to including a technical specification to complete a technical making task or tasks. They are assessed on their application of the skills listed for the Performance Outcomes.

Students are not assessed against specific 'knowledge' outcomes but are expected to draw on and apply related knowledge to ensure appropriate outcomes when applying the skills in response to an assessment scenario.

Students undertake the Make to a specification task under a combination of supervised and controlled conditions.

The assessment takes place over multiple sessions, up to a combined duration of

22 hours and 30 minutes.

The 'Make to a specification' task outcomes consist of physical objects that have been made to a set specification, supported by a portfolio of evidence submitted electronically.

This assessment is set by Pearson and marked by the provider. Pearson will externally moderate the marks.

Administration

Providers must follow the guidance in the following:

- General Administrative Support Guide
- Administration Support Guide for the specific Technical Qualification Occupational Specialism (if applicable)

These are located on the Training and Admin Support webpage.

Performance Outcome		Weighting	
		Raw marks	% of total marks
PO1	Analyse, interpret and respond to a creative proposition or a brief taking on board purpose and end user	32	11.4%
PO2	Create designs to realise the brief development	39	13.8%
PO3	Research and evaluate materials, processes, tools and techniques to determine suitability to realise the design	66	23.4%
PO4	Use the selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the design.	127	45.0%
PO5	Review and evaluate the design process and product against the original brief and proposition.	18	6.4%

Resources for the delivery of Furniture Maker (Upholsterer)

Providers are required to have the following resources to deliver this OS:

- IT suite with access to the internet, design software (for example, Canva, SketchUp, Blender, CAD (Sketchup, AutoCAD, Solidworks), Adobe Creative Cloud, PowerPoint, Photoshop/Illustrator, InDesign) and digital facilities, including image scanner
- online subscriptions (for example, Home and Garden, Home, LivingETC, Interior Design, Ideal Home)
- relevant subject-specific books, journals
- teachers with qualifications and/or experience in the furniture making/upholstery sector
- a curriculum team with experience and knowledge that span the breadth of the qualification content.

Assessment Task	Resource required
1 'Design and Make' task	• access to the internet • digital facilities (for example, image scanner, digital camera, printer) • traditional drawing materials media (for example, paper, pencil, ink, paints, collage materials) • digital portfolio • photographic equipment • wood working/upholstery workshop, materials, tools and equipment • student's choice of upholstery fabric and trimmings • chair frame ready for upholstery • computer, projection screen, presentation software (for example, PowerPoint, Prezi etc.) • audio-visual recording equipment, for example, tripod, camera • clock • calico material for maquette • sewing machine • pattern paper • scissors • pins • sewing thread • tape measure • calculator Pearson-provided resources: • reference list template • experiment recording template • health and safety record template. • peer feedback template • estimated timeline plan template • costings template.

Assessment Task	Resource required
	• client feedback template • final testing materials record • health and safety record for testing material • production schedule template • contingency plan template • final design making record template • evaluation template.
2 Technical 'Make' task	• calculator • a piece of 2mm or 3mm thick wood or plastic to cut templates from • measuring equipment, marker pen • tools suitable for cutting thin materials • 12mm MDF • measuring equipment, marker pen • saw suitable for cutting MDF • 25mm foams • templates to mark shape to be cut • cutting tools for foam • selection of adhesives suitable for fixing foam • suitable Personal Protection Equipment (PPE) and H&S considerations • student's choice of fabric for panels • suitable adhesives for gluing fabric • staple gun • thin foam • backboard • panels • drill • drill bit • screws • screwdriver • suitable backing fabric. Pearson-provided resources: • evaluation template.

Furniture Maker (Upholsterer) global resource list

- foam cutters, foam-various thicknesses/density
- buttoning machine
- filling (for example, natural and synthetic)
- range of fabrics and accessories, (for example, calico, canvas, cotton, hessian, scrim, recycled fabrics, piping, braid, zips, studs, mixed threads)
- springs and rings - various sizes
- pins, tacks
- and tools (for example, hammers, cross pein hammer, magnetic, wooden/hide mallet, hand saw)
- various sizes of chisels, ripping chisel
- clamps, cramps - varied in size
- tack lifter, staple lifter
- bradawl
- cabinet scrape
- pincers, pliers, scissors/shears - hand and powered
- webbing and stretcher
- eyelet/hole punchers
- nail punchers
- regulator
- needles (for example: selection of curved needles, mattress needle, spring needle)
- skewers and pins tacks
- sewing machine, overlocker
- short and long nose staple gun
- compressor
- measuring tools
- wooden frames/timber for preparation of frames
- varnishes and adhesives, glue guns, fixatives (spray booth)
- paper, cardboard (for templates and patterns)
- Personal Protection Equipment (PPE) (for example, filter mask, gloves, safety goggles and boots).

5. Textiles and Fashion Maker

Performance Outcome 1: Analyse, interpret and respond to a creative proposition or a given brief taking on board purpose and end user

What skills do students need to demonstrate?
TFS1.1 Clarify the purpose of the brief: • determine the end user of the product • identify the appropriate route to market • establish budget available to realise the product (E4, M2, M9)

TFS1.2 Undertake research to inform the creative product:
• identify the appropriate research factors to influence the research
• identify appropriate sources of research
• identify appropriate sources for researching materials, with consideration to:
  ○ availability
  ○ lead time
  ○ costs
  ○ sustainability
• select and apply the appropriate research methodologies, while using primary and secondary resources:
  ○ qualitative research
  ○ quantitative research
• document and record research findings
(D1, D5, E4, E5, M6, M8, M9)

TFS1.3 Collate findings of research using different media: • organise and record research findings and information logically using appropriate media (for example, mood board, mind map, digital presentation, sketchbook) • identify appropriate concepts and themes • summarise findings • maintain an accurate and ongoing record of sources and references (D1, D5, E1, E4, E5)
TFS1.4 Explore design elements and principles in response to the design brief: • experiment with each design element and principle (for example, texture, colour, shape, scale/proportion, pattern, repetition, contrast, silhouette, emphasis, rhythm) • identify appropriate application of each design principle to inform the creative product (D1, D5)

TFS1.5 Generate ideas for initial concept to meet the design brief:

- collate evidence of experimentation (for example, drawings, illustrations, knit, embroidery, embellishment, construction)
- use 3D experimentation on the dress stand to produce initial ideas for form, shape and volume
- add draping techniques translated into flat patterns for ideas generation
- utilise quarter scale stands to experiment with moulage techniques
- create 'mock-ups' to generate shape
- draw conclusions from research findings and exploration of design principles
- generate ideas for initial concept
- evaluate initial ideas against the requirements of the design brief and justify decisions

(E1, E4, E5)

What underpinning knowledge do students need?	

TFK1.1	**The definition of:**
	• textiles:
	  ○ constructed via machinery or hand
	  ○ printed textiles (for example, flat printed, 3D printed, digital, screen)
	  ○ comprises of a network of natural or artificial fibres (for example, animal, plant, mineral and synthetic, knitted textiles)
	• leather:
	  ○ material made from:
	  – animal skin or hide
	  – animal free or vegan materials, faux leather
	• sewn products:
	  ○ fastening or attaching using a range of different methods (for example, sewing machine, adhesive):
	  – clothing
	  – accessories
	  – soft furnishings
	  – textile art.

TFK1.2	**The types of techniques associated with textile, leather and sewn products:** • dyeing • felting • knotting • stitching • knitting • weaving • lace • tanning • fusing • printing • constructed textiles.

TFK1.3	**The purpose and scope of a design brief:**
	• purpose:
	  ○ document outlining the strategy and use of a creative project
	• scope:
	  ○ budget
	  ○ timescales/lead time
	  ○ purpose of the item
	  ○ defining the end user
	  ○ trend.

TFK1.4	**The differences between the following types of briefs:**
	• commission:
	  ○ target market (for example, private, gallery)
	  ○ funding:
	  – public funding
	  – private funding
	• bespoke:
	  ○ custom made/designed for an individual
	  ○ market:
	  – public
	  – private
	• small batch production
	• sample:
	  ○ pre-production sample or final sample
	  ○ manufacturing processes to consider
	  ○ resourcing
	• mass production:
	  ○ higher volume
	  ○ focused on getting product to market.

TFK1.5	**The application of design elements and design principles in design development:**
	• design elements:
	  ○ line
	  ○ line type (for example, vertical, horizontal, thick, thin, zigzag)
	  ○ adds pattern or texture
	  ○ adds emphasis (for example, weight of line can create depth, vertical lines can create length)
	• texture:
	  ○ impacts functionality of item
	  ○ affects how colour appears

	• shape – 2D:
	  o garment shape
	  o shapes can create different looks
	• form – 3D:
	  o shape and structure of the item
	• colour:
	  o colour wheel
	  o hue, value, intensity and tone
	  o colour trends and forecasting
	  o colour palette
	  o evokes emotion and mood
	• balance:
	  o symmetrical and asymmetrical
	  o balance between shape and white space
	• scale/proportion:
	  o scale of item in relation to its purpose
	  o relationship between all elements and overall item
	• repetition:
	  o uses same/similar design elements throughout design
	  o pattern repeat
	• contrast:
	  o created by using different, often opposite, elements in the same design
	  o colour, texture or shapes
	  o subtle or striking
	  o creates a focal point
	• volume:
	  o related to style and shape of item
	• unity/harmony:
	  o all elements working together
	  o overall aesthetic of item
	  o balance between unity and variety
	  o functionality.

TFK1.6	**The stages of the development process within textiles and fashion:**
	• design/concept brief stage:
	• research and development stage:
	  o exploration
	  o production planning
	  o budget planning
	  o sources of materials
	• pre-production stage:
	  o experimentation and testing
	  o prototype

	• approval stage:
	  o present ideas to client
	• production stage:
	  o pattern making:
	  – create detailed pattern pieces for final design
	  o toile/sampling:
	  – produce item to meet the brief
	  o completion of technical documentation
	  o timeline of all parts for production
	• post-production stage:
	  o product reviewed by client
	  o evaluation and reflection.

TFK1.7	**Types of markets and the features of associated settings within the textile and fashion industry:**
	• clothing and accessories, homeware and interiors, and commercial soft furnishing markets:
	  o high street setting:
	  – mass volume production
	  – multiple points of sale
	  – seasonal sales using dead stock
	  – celebrity endorsed collections
	  o designer setting:
	  – higher price point
	  – lower volume production
	  – higher quality item
	  o couture setting:
	  – made to order from the collection as opposed to readily available
	  o bespoke setting:
	  – unique
	  – one-off purpose made item
	• installation commission and/or exhibition market:
	  o private or commercial settings:
	  – functional
	  – conceptual, focused on ideas
	• entertainment market:
	  o private or commercial:
	  – wearable art
	  – one-off purpose made
	  – unique
	  – functional
	  – varying scales dependent

	• additional textiles market sectors:
	  ○ textiles market sectors:
	  – upholstery
	  – soft furnishings
	  – curtains
	  – bed linens
	  – towels and flannels
	  – throws and blankets
	  ○ fine art:
	  – painting canvas
	  – soft sculpture
	  – fibre brushes
	  ○ floor coverings:
	  – carpets and rugs
	  ○ agricultural:
	  – protective plant wadding
	  – shade nets
	  – thermal screens
	  – crop covers
	  – weed control mats
	  – mulch mats
	  ○ conservation and restoration
	  – historical clothing
	  – interiors conservation
	  – tapestries and banners
	  – wallcoverings.

TFK1.8	**The relationship between ergonomics and the end user in textile and fashion making:**
	• how things sit and fall:
	  ○ fabric type/weight
	  ○ structure
	• form and function of item:
	  ○ consideration of end use (for example, capacity of item, strength of textile and item, proportion, durability, adaptability, washability)
	  ○ size of end user
	  ○ specific characteristics required (for example, waterproof, ultraviolet (UV) resistant, moisture wicking, stainproof, protective qualities, sustainable considerations)
	• aesthetics:
	  ○ appearance of final item

	• accessibility:
	  ○ getting the garment on and off
	  ○ compatibility of fastening to fabric type
	  ○ fastenings selected to enhance and complement garment
	  ○ longevity of fastenings
	  ○ ease of replacing fastenings in case of breakage or failure.

TFK1.9	**The features used to determine suitability for purpose of a proposed design:**
	• style:
	  ○ shape
	  ○ aesthetics
	  ○ cultural considerations
	• material characteristics:
	  ○ durability
	  ○ washability
	  ○ breathability
	  ○ smart textiles
	  ○ biodegradable/recyclable/reusable
	  ○ source of raw material, (for example, virgin fibres or recycled).
	• seasonal:
	  ○ thermal
	  ○ waterproof
	• functionality
	• specific characteristics required (for example, waterproof, ultraviolet (UV) resistant, moisture wicking, stainproof).

TFK1.10	**Differences between costing and pricing:**
	• costing:
	  ○ expenses incurred to produce a product/service:
	  – raw materials
	  – direct costs
	  – overheads
	  – maintenance
	  – resources
	  – consumables
	  – time
	• pricing:
	  ○ amount a customer is required to pay for the product/service:
	  – expenses incurred plus retail mark up and value added tax (VAT)
	  – wholesale, retail or trade pricing.

TFK1.11	**The factors to consider when costing a design brief for textiles and fashion making:**
	• costing methodologies/models for different markets:
	  ○ commission
	  ○ bespoke
	  ○ small batch production
	  ○ sample
	  ○ mass production
	  ○ wholesale
	  ○ direct to brand
	• time to produce:
	  ○ design, labour and construction time
	  ○ timescales/lead time from client
	• cost of materials:
	  ○ fluctuating prices of materials
	  ○ varying levels of material quality
	• outsourcing costs:
	  ○ specialist processes (for example, digital printing, pleating, dyeing, fusing, finishing)
	  ○ production
	• competitor analysis
	• level of expertise:
	  ○ value of practical skills and experience
	  ○ reputation
	• external factors:
	  ○ currency conversion rates if selling abroad
	  ○ import/export duties
	  ○ higher shipping costs
	  ○ VAT.

TFK1.12	**The characteristics of qualitative and quantitative research to support development of the design brief:**
	• qualitative research – collection, analysis and interpretation of non-numerical information:
	  ○ gathers opinions and preferences
	  ○ asks open ended questions
	  ○ requires small respondent size
	• quantitative research – collection, analysis and interpretation of numerical information:
	  ○ identifies patterns and trends
	  ○ makes predictions based on cause and effect
	  ○ forms conclusions about broader populations
	  ○ asks closed questions
	  ○ requires large respondent size.

TFK1.13	**The characteristics of primary and secondary research:**
	• primary research:
	  ○ original data and information collected by researcher (for example, through interviews or observations)
	  ○ specific to requirements of research
	  ○ ownership of data and information
	• secondary research:
	  ○ use of existing data and information compiled by others
	  ○ unlikely to be specific to requirements of research
	• referencing requirements:
	  ○ reference the sources when:
	  – summarising an idea, concept or opinion
	  – quoting data, facts or information
	  – using images, visuals and other media
	• using a recognised referencing system that includes:
	  ○ artist/author
	  ○ bibliographic reference (for example, title of publication)
	  ○ source (for example, location or uniform resource locator (URL)
	  ○ date (for example, year of publication).

TFK1.14	**The scope of research and its value to support the development of a design brief:**
	• the market, competitors and current trends:
	  ○ ideology of markets, market trends
	  ○ understanding of various methods of trend forecasting, including trade fairs, online services
	  ○ identifies competitors, designers and businesses
	  ○ gains insight into regional variances
	  ○ identifies different retail options for the product
	  ○ improves knowledge of current and new and emerging materials and production techniques
	  ○ provides inspiration
	  ○ avoids replication of existing ideas
	• cultural context:
	  ○ provides insight into values and ideology of movements.
	  ○ awareness of possible cultural sensitivities (for example, cultural appropriation, beliefs and values, customs, respect)
	• historical context:
	  ○ influence of art and design movements (for example, Art Deco, Bauhaus), artists, provides designers, practitioners and materials, processes and techniques
	  ○ supports understanding of associated design and production processes

	○ influence of political ideologies, conflicts, economics, living conditions, access to materials (local/imported), value of rarer materials and how this impacts on design/trends ○ impact of social identity on a design • sustainability and ethical sourcing of materials, processes: ○ increases awareness of the environmental impact of raw materials used and processes applied ○ understanding supply chain and end of life of products ○ identifies ethical sources for materials ○ improves knowledge of current production methods including packaging ○ efficiency of materials, minimising waste, recycling or reusing materials in the creation of products. ○ understanding of potential cost implications • materials, techniques and processes: ○ considerations to availability, cost, time • end user profile: ○ demographics ○ psychographic, including lifestyle, habits and preferences ○ purchasing behaviour and history, engagement with shopping and satisfaction levels.
TFK1.15	**Types of research sources and their value to support the realisation of the design brief:** • museums, exhibitions and galleries: ○ enables first-hand experience of viewing products ○ provides an opportunity to meet curators, professionals and experts • physical stores – high street and independent: ○ enables first-hand experience of viewing products ○ provides opportunities to handle products • online stores: ○ offers wide ranging and variety of examples to identify trends and styles • books, magazines, catalogues and online journals and blogs: ○ easily accessible ○ provides opportunities to study other works ○ identifies trends and styles. ○ provides insight into technologies, processes and techniques • digital/online sources: ○ vast range, also covers new and emerging technologies ○ social media enables interaction with makers ○ up to date with trends • workshop visits: ○ provides opportunities to meet designers, practitioners and experts ○ provides insight into processes and techniques

	• observations and insights gained from experience:
	  o draws information from unexpected sources, previous projects and customer satisfaction feedback
	• commercially available market analysis reports:
	  o breadth of market information
	• surroundings:
	  o design inspiration (for example, colours, textures and pattern).

TFK1.16	**The factors to consider when increasing sustainability of design products:**
	• provenance of materials and components:
	  o traceable origin of raw materials
	  o production methods
	  o extraction methods:
	  – impact of extraction
	  – sustainability
	  o accurate certification and labelling to ensure provenance
	• environmental impact:
	  o current concerns:
	  – clean water pollution
	  – water use
	  – waste
	  – air and soil pollution
	  – deforestation
	  – animal endangerment, including intense over-farming, live skinning, down and feather plucking, loss of habitat, inhumane slaughter
	  – loss of habitat from deforestation
	  – sustainability of alternatives such as oil derivative vegan faux leather and fur and non-biodegradable fabrics
	  o current and upcoming processes to improve environmental impact:
	  – regeneration farming
	  – water-free printing processes
	  – safer chemical use in dyeing processes
	  – recycled yarn or fabric
	  – improved cutting technology to minimise waste
	• supply chain:
	  o consider sustainability in each stage of the supply chain:
	  – sourcing
	  – production
	  – storage
	  – transportation
	  o consider organisations' policies around ethical production and sustainability
	  o ethical auditing to ensure compliance to international human related policies throughout the design and make processes
	  o 'greenwashing', which allows for companies to appear more sustainable than they are, through falsification of documents and figures

	• circular economy – production and consumption business model to tackle global challenges:
	  ○ circular design concepts – approaches to the design and innovation of products to have a low impact on the environment and positive social purpose:
	  – supply chain – avoidance of materials that damage the environment or are unsustainable through their sourcing or processing
	  – modular – use of individual component parts to enable products to be disassembled for ease of replacing, recycling or repurposing
	  – longevity – design that favours function over trends, using durable materials and retention of value over time
	  – efficiency of materials – minimising waste, recycling or reusing materials in the creation of new products
	  – multi-function – avoidance of single-use products to increase function and value
	  – end of life – incorporation of planned repurposing or return to maker to be reused in new product.

TFK1.17	**Approaches used to develop ideas:**
	• creation of a brand-new idea
	• translation and adaption of an existing idea:
	  ○ inspiration from other ideas to create a new design
	  ○ referencing original source, including inspiration from other designers
	  ○ awareness of copyright laws, trademarks and intellectual property.

TFK1.18	**Definition of originality and plagiarism in design:**
	• originality:
	  ○ process or design ideas that are new
	• plagiarism:
	  ○ using existing work or ideas and passing them off as your own
	  ○ not correctly acknowledging and referencing quotes or images is own work.

TFK1.19	**Potential implications of plagiarism in design:** • damaged reputation • legal proceedings • monetary loss • emotional impact • ethical impact.

Performance Outcome 2: Refine and communicate ideas for product development

What skills do students need to demonstrate?

TFS2.1 Review initial ideas for further development assessing suitability for purpose:
• compare each design against the specification
• assess the suitability of the design for the purpose with consideration to:
  ○ materials
  ○ processes and techniques
  ○ tools and equipment.
• select design ideas for further development and analyse, review and adapt as required
• record and document each stage of the review and decision-making process
(E3, E4, E5)

TFS2.2 Present ideas to colleagues/clients for studio critique:
• prepare selected ideas for presentation by:
  ○ select and apply the appropriate design tools and techniques:
  – toiles/prototype
  – mood boards
  – drawings
  – illustrations
  – samples
  – digital presentations
  – photographic
  – audio-visual presentations
  ○ structure a presentation using a cohesive and well edited selection of ideas
  ○ apply industry-standard language to communicate requirements to colleagues/clients
  ○ select appropriate format for presentation (for example, formal presentation, informal discussion).
• present ideas using presentation conventions
  ○ explain decision-making process and selection decisions
  ○ invite feedback from colleagues/clients.
• document and record appropriate feedback accurately and concisely
(D1, D2, D3, D4, D5, E1, E2, E3, E4, E5, E6)

TFS2.3 Adapt ideas in response to feedback: • gather feedback from colleagues/clients following presentation of ideas • analyse feedback and draw conclusions • adapt ideas in response • compare ideas to design brief to ensure suitability for purpose (D2, E4, E5)

What underpinning knowledge do students need?	

TFK2.1	**The purpose of the following tools and techniques employed in the development and presentation of concept:**
	• mood board – visual collage to organise and communicate concepts and ideas:
	  ○ physical items – collection of real-world items, including swatches and materials
	  ○ digital software – curate and display selected items digitally
	  ○ concept map – graphical technique for structuring qualitative research data
	  ○ physical – hand-drawn/written diagrams.
	• 2D representation – informal and quick technique to capture initial concepts:
	  ○ sketch book
	  ○ digital drawing
	  ○ 2D computer-aided design (CAD)
	• 3D representation – formal and precise technique to capture refined ideas:
	  ○ 3D CAD
	  ○ toile
	  ○ prototype
	  ○ sample
	  ○ scale model.

TFK2.2	**Advantages and limitations of different ways to communicate ideas:**
	• presentations:
	  ○ advantages:
	  – allows interaction with the audience:
	  – can be physical or virtual
	  – allows observation of reactions and non-verbal cues
	  – provides opportunities to ask audience questions and gain feedback
	  ○ limitations:
	  – time constraints
	  – availability of clients or resources
	• discussion (for example, in person, virtual or telephone):
	  ○ advantages:
	  – builds client relationships
	  – sets early expectations
	  – opens discussion on ideas and outcomes
	  ○ limitations:
	  – time spent may not be recouped

	• visual communication
	  o advantages:
	  – extends visual/sensory understanding of designs/materials
	  – accurate representation of colour and/or texture
	  o limitations:
	  – preparing samples can be time consuming
	  – final products may not look exactly the same as the sample
	• electronic communication:
	  o advantages:
	  – can be informal and formal
	  – faster response times
	  – can provide interactive content
	  – ease of duplication of information
	  – ease of communication worldwide
	  – ecological as it removes need to travel to visit clients
	  o limitations:
	  – messages can be lost when in high volumes, moved into spam/junk or not sent
	  – potential ambiguity due to interpretation of content
	  – perception of design can be different between sender and receiver.

TFK2.3	**The differences between formal and informal communication:**
	• formal:
	  o structured
	  o time consuming
	  o detailed
	• informal:
	  o free flowing
	  o spontaneous.

TFK2.4	**Types of presentation conventions to consider when presenting ideas to colleagues/clients:** • spelling, punctuation and grammar • layout and design • text (for example, colour, font, size) • accessibility • terminology, including correct technical terms and professional writing style • medium, including traditional and digital presentations.

TFK2.5	**Common industry and sector language used to communicate design and requirements:**
	• common industry language:
	  ○ flat technical drawing:
	  – 2D drawing
	  ○ illustration:
	  – artist, stylised drawing
	  – shows how the item would look, feel and fit when completed
	  ○ colour standard:
	  – exact colours selected for item
	  ○ bill of materials (BOM) – lists all physical resources needed to create your item, including trims and labelling
	  ○ costing sheet:
	  – statement showing all accumulated costs for a product
	  ○ layplan:
	  – layout of pattern on fabric to maximise efficiency and reduce waste
	  ○ technical pack:
	  – including technical drawings, illustrations, BOM, colours, sample
	  ○ production schedule:
	  – allocates resources, operations and processes required to create end product
	  ○ specifications:
	  – sizing
	  – measurements
	  – composition
	  ○ point of measurement:
	  – measurement points usually on flat items
	  ○ pattern:
	  – template used to cut out parts of an item
	  ○ surface decoration:
	  – images printed onto textile, embellishments, embroidery
	  ○ pattern markings:
	  – industry-standard pattern symbols and instructions
	  – construction pattern markings
	  ○ toile:
	  – completed item used to check fit, construction and end aesthetic
	  ○ sample:
	  – completed item using final resources
	  ○ colour fastness:
	  – ability to resist fading
	  ○ fent:
	  – scraps of fabric left from manufacturing

	○ finish: – mechanical finish – chemical to provide specific effects • construction sector language: ○ right side/wrong side – can be determined by: – pattern – texture – colour – marking in selvedge – weave – the look of the knit stitches ○ stitch length ○ seam allowance ○ stitch type for apparel and accessories ○ seam type ○ selvedge ○ grain line ○ bias ○ knit stitches ○ gauge ○ tension ○ fastenings ○ embellishments. • textile sector language: ○ fibre ○ yarn ○ warp and weft ○ ply ○ weave ○ lifting plan/peg plan ○ loom ○ technical textile ○ smart textile • embroidery sector language: ○ stitches ○ equipment: – hoop – foot – tambour frame.

	• leather sector language:
	  ○ tooling
	  ○ hide
	  ○ distressed
	  ○ full grain
	  ○ top grain
	  ○ split grain
	  ○ bonded leather
	  ○ suede
	  ○ nubuck.

TFK2.6	**The types of industry-standard symbols used to communicate design and requirements:** • care labelling symbols • material composite symbols • EU labelling symbols • sustainability symbols • trademark symbols • pattern marking symbols health and safety symbols, including flammability for furnishing fabrics.

TFK2.7	**The potential capabilities and limitations of existing and emerging design and drawing technologies:**
	• digital design programs:
	  ○ potential capabilities:
	  – enables accurate and editable designs
	  ○ potential limitations:
	  – requires initial investment in software and hardware
	• 3D body scanning:
	  ○ potential capabilities:
	  – captures the size and shape of body quickly
	  ○ potential limitations:
	  – accuracy can vary
	• augmented reality (AR) and virtual reality (VR):
	  ○ potential capabilities:
	  – offers ability to present and customise a design remotely
	  ○ potential limitations:
	  – price and availability of equipment
	• artificial intelligence (AI):
	  ○ potential capabilities:
	  – creates designs based on trend data
	  ○ potential limitations:
	  – not developed enough to rely on AI alone.

TFK2.8	**The potential capabilities and limitations of existing and emerging production technologies:**
	• micro factories:
	  ○ potential capabilities:
	  – offers highly automated and small-scale factories
	  – increases speed to market
	  – leaves low carbon footprint
	  – offers production flexibility
	  ○ potential limitations:
	  – not suitable for high volume items
	  – may be heavily reliant on technology
	• machinery:
	  ○ potential capabilities and limitations
	• digital cutting technologies:
	  ○ potential capabilities:
	  – increases accuracy and cleaner cuts
	  – seals fabric edges to prevent fraying
	  – cuts multiple types of fabric
	  – reduces time compared to traditional methods
	  – cuts on demand
	  ○ potential limitations:
	  – specialist training needed to use machinery
	  – expensive start-up costs
	• 2D printing:
	  ○ potential capabilities:
	  – reduces costs of digital printing compared to screen prints or handprints
	  – offers flexibility to be used on a wide range of base materials
	  – provides different methods to create different looks
	  ○ potential limitations:
	  – colour accuracy
	  – costs for machinery and ink
	  – different ink needed for different base materials
	  – expertise needed for digital designs
	• 3D printing:
	  ○ potential capabilities:
	  – produces less waste and is less labour intensive
	  – provides opportunities for digital knitting
	  – offers sustainable substrates
	  ○ potential limitations:
	  – can be time consuming to print
	  – accuracy can be affected by substrate consistency
	• automatic, waterless dye technology:
	  ○ potential capabilities:
	  – reduces water use leading to less pollution
	  – reduces chemical and energy use

	○ potential limitations: – expensive to set up – limited to specific textiles • smart materials: ○ potential capabilities: – enhances the end-user experience – offers interactivity ○ potential limitations: – cost of materials – may need specialist skillset – potential environmental impact of the materials is unknown.
TFK2.9	**Advantages and limitations of different routes to market:** Understand where products fit in the market before targeting where to sell or market work: • exhibitions and trade fairs: ○ advantages: – exposure to larger retailers – networking opportunities – engage with customers – evaluate competitors' limitations – presence of direct competitors ○ limitations: – can be costly – direct exposure to competitors – logistical issues – may not see cost return • retail – selling to retailers: ○ advantages: – high visibility for your product – boost own-brand recognition – build high-volume sales ○ limitations: – operate on a small profit margin – reliance on small number of customers to sell to wider market – product might be withdrawn from shelves with little or no notice • wholesale: ○ advantages: – selling of products in large volume – risk of selling is absorbed by wholesaler ○ limitations: – profit per item may be lower – no opportunity to build relationship with end user – not always able to influence branding or presentation

	• direct to customer:
	  o advantages:
	  – greater control over customer engagement
	  – greater control over price
	  – simplified onward supply chain
	  – personal interaction with customer
	  – control over branding and presentation
	  o limitations:
	  – need to identify own customers
	  – deliver products in certain timeframe
	  – overheads
	  – customer reach can be limited by physical store location and opening hours
	• additional routes to market:
	• barter and exchange
	  o advantages:
	  – no money needs to change hands
	  – face to face interaction
	  – based on people's trust
	  o limitations:
	  – relies on honesty
	  – limited to individual expectations
	• circular fashion:
	  o advantages:
	  – diminishes the 'buy-wear-waste' model
	  – encourages responsible manufacturing
	  – takes into consideration extended 'end of life' for each product
	  – encourages conscious consumerism
	  – supports ethical and sustainable values
	  – consumers look after clothing more consciously (make do and mend)
	  – brings greater knowledge of the industry to the consumer
	  o limitations:
	  – relies on manufacturers changing to a more considered manufacturing model
	  – consumers have to engage positively with the ethos
	  – competition with increasingly 'fast fashion'
	  – inevitably goods are more expensive
	• renting a rail:
	  o advantages:
	  – inexpensive
	  – ethically sound
	  – community minded (many charity sales use this method)
	  – quick and easy to assemble and take down

	○ limitations: – short selling time (usually one day) – limited customer base as ‘walk-in’ only – goods have to be taken to venue and unpacked and repacked in a limited timeframe • festivals and entertainment events: ○ advantages: – large numbers of potential customers – changing customers walking by every day – relatively cheap to hire a stall ○ limitations: – often very niche markets – sales can be weather reliant – getting goods to the site, setting up, packing away each evening is time consuming – very long working days.

Performance Outcome 3: Experiment with materials, processes, tools and techniques to determine suitability for purpose

What skills do students need to demonstrate?

TFS3.1 Experiment with materials to realise the design brief:
• explore different materials considering:
  ○ affordance, related to quality, characteristics and end use
  ○ material characteristics
• comply with safe working practices to test the potential and limitations of materials
• record and document all stages of the process using a logbook or technical document, outlining exact processes, quantities and qualities of component part
(D1, E3, E4, M1, M2, M10)

TFS3.2 Experiment with processes and techniques to realise the design brief: • explore different processes and techniques for different textiles and fashion products • apply appropriate processes and techniques to create samples • comply with safe working practices when using tools and equipment • record and document all stages of the process using a testing record, logbook or technical document (D1, E3, E4, M1, M2, M10)
TFS3.3 Create and use accurate records of testing of materials: • testing template • self-reflective learning log • daybook • online blog • photographic and written recording of experiments and prototypes • voice recording • daily journal • progress record

TFS3.4 Reflect on experimentation and adapt design accordingly to meet the design brief:
• compare outcomes of experimentation against the design brief:
  ○ review the suitability of materials
  ○ review the processes and techniques
  ○ review the tools and equipment
• review original design brief against outcomes of experimentation
• adapt design following experimentation to ensure design meets the brief
• draw conclusions and select materials, processes and techniques based on outcomes of experimentation
• select a final design and justify decisions
• record and document all stages of the process using a logbook or technical document
(D1, E3, E4, M1, M2, M10)

TFS3.5 Review original creative proposition against the outcomes of experimentation:

- final evaluation:
  - responding to critique
  - making changes in response to feedback
  - reflective practice and practical adaptations
- reviewing own strengths and weaknesses:
  - referring back to the requirements of the brief
  - critical reflection on own performance
  - recognition of personal strengths and weaknesses
  - carrying over knowledge and experience to future projects

TFS3.6 Create a technical specification using appropriate technical language:

- create a flat drawing for your product
- record accurately:
  - dimensions including measurement points and final size
  - resources required
  - construction methods, machinery and processes required
  - colour and pattern requirements
  - industry symbols
  - detailing requirements
  - finishing requirements

(E3, M3, M7, D1, D2)

What underpinning knowledge do students need?	

TFK3.1	**The types of materials used in textiles and fashion making:**
	• natural fibres (for example, wool, silk, cotton, cellulosic):
	  ○ material characteristics (for example, biodegradable, most can be recycled and reused, can be antiallergenic and antifungal, naturally flame retardant)
	  ○ process or construction requirements (for example, weaving, sewing, knitting)
	  ○ limitations (for example, not as strong as synthetic fibres, can wrinkle more easily, not as long lasting, not always continuously recyclable)
	  ○ use of recycled natural fibres to aid sustainability
	• synthetic materials:
	  ○ material characteristics (for example, can be made into any length, more durable than natural fibres, easier to wash and maintain than natural fibres)
	  ○ process or construction requirements (for example, weaving, sewing, embroidery)
	  ○ limitations (for example, do not degrade easily, not all synthetic fibres can be recycled, ecological cost, ethical considerations)

	• man-made materials (for example, viscose, rayon, Lycra):
	  o material characteristics:
	  – characteristics can depend on specific mix of material (for example, can be cheaper to produce, easier to produce large volumes, can be hardwearing depending on material blend)
	  o process or construction requirements (for example, weaving, sewing, pleat)
	  o limitations:
	  – limitations can depend on what it is made from (for example, various degrees of fire retardant, synthetic elements may not degrade easily)
	  o use of recycled synthetics to aid sustainability
	• leather:
	  o material characteristics (for example, high tensile strength, can absorb or resist water, thermal insulation, high malleability, can be recycled)
	  o process or construction requirements (for example, sewing, gluing, edge finishing)
	  o limitations (for example, no stretch, high cost, environmental/ethical considerations)
	• bast fibres:
	  o material characteristics (for example, good tensile strength, which increases when wet, flexible, durable, can resist humidity and germs, recyclable)
	  o process or construction requirements (for example, weaving, sewing, knitting)
	  o limitations (for example, high moisture absorption, abrasive, poor drape).

TFK3.2	**Factors to consider when calculating the final outcome:**
	• scale:
	  o pattern match
	  o proportion
	  o scale
	• dimensions:
	  o material constraints, such as non-conventional fabric width
	  o suitability for final location or function
	  o installation considerations for fine art textiles or specialist exhibition items
	  o body shape and size
	• thickness, weight and density of textile:
	  o functional considerations
	  o construction methods
	  o suitability of material for the final outcome.

TFK3.3	**Ethical and environmental considerations when choosing materials and processes:** • carbon footprint of materials • animal welfare related to leather and other animal skins • human welfare related to working conditions, wages, health and safety, slavery • natural resource availability affecting economic, environmental and ecological impact • production methods reliant on the use of pesticides, insecticides, chemicals and water usage • longevity of materials and the lifespan of materials • minimising waste and environmentally ethical disposal or repurposing of excess materials.
TFK3.4	**Types of sources of raw materials:** • animal source: o wool (for example, sheep/lambswool; alpaca; angora; mohair; camel hair; cashmere) o silk (for example, silkworm; moth silk; spider silk; Ahimsa peace silk) o leather or skin (for example, cow; calf; pig; snake; crocodile; lizard; fish; fur) • plant source: o seed fibre, including cotton, hemp, jute and linen o rayon o bamboo o pineapple o nettle yarn • synthetic source: o petroleum-based fibres such as polyester and nylon o polyurethane (PU) o aluminium and plastic mix o polychloroprene.
TFK3.5	**Factors that can determine measurements:** • textiles: o purpose of the textile and the dimensions of outcome o number of stitches or ends per inch o measurement of the repeat pattern o dimensions of the material and how the pattern fits into the material o scaling up or down o equipment or machinery size • apparel or accessory: o tension of knit in relation to size o measurements of clothing, including standard and bespoke sizing o material constraints related to fabric or other materials' shape and size

	○ volume and dimensions of accessories ○ accessory specific measurements.
TFK3.6	**The features of working drawings, specifications and production schedules:** • technical drawing: ○ clear detailed drawing to visualise final item ○ different views to show clear and accurate details of the item ○ construction details ○ industry-standard descriptions for the garment or item ○ industry-standard symbols used in the manufacturing process • creative illustrations: ○ artistic in nature ○ helps to visualise the end result ○ scale and proportion can be stylised ○ aesthetic focused • specification: ○ purpose of item ○ all material and accessory requirements ○ construction methods ○ colour and pattern ○ points of measurements ○ final size ○ washing and labelling requirements ○ finishes and trims • production schedule: ○ design phase: – design development – sample creation – client approval – bill of materials (BOM) development – sourcing of correct resources ○ production phase: – consideration for outsourcing for cutting, manufacture or specialist processes – cutting if appropriate – sewing/weaving/printing – washing if appropriate – finishing – inspection – labelling and packing.

TFK3.7	**Factors to consider when interpreting design briefs, working sketches and technical specifications:**
	• considerations:
	  ○ suitability for end use and purpose
	  ○ dimensions of the final product
	  ○ length or size of fabric
	  ○ allowances to obtain a perfect fit
	  ○ tolerance to allow for errors
	  ○ detailing, additions and accessories finishing
	  ○ shape and proportion
	  ○ sizing
	  ○ pattern repeats
	  ○ colour considerations
	  ○ nap
	  ○ print types
	• textile-specific considerations:
	  ○ weave draft
	  ○ basic weave structure and pattern
	  ○ knit techniques
	  ○ weight and thickness of yarn
	  ○ knit techniques
	  ○ print design
	• sewn product-specific considerations:
	  ○ pattern production
	  ○ grain
	  ○ balance marks
	  ○ notches
	  ○ garment construction
	  ○ silhouette.

TFK3.8	**Sewn products** • block making and adaptation • flat pattern cutting • grading • draping on the stand • shaping (for example, darts, easing, elasticating, steaming) • lay planning • cutting • toile production • machine sewing (for example, seaming, overlocking, French seams, twin needle, canvassing, buttonholes, pressing, forming, steaming, fusing, labelling, digital machine programming) • hand sewing (for example, soft tailoring, hemming, finishing) • computer compatible machines • sample production

	• finishing • steam pressing • quality control.

TFK3.9	**Factors to consider when choosing materials:**
	• cost:
	  ○ cost of raw material
	  ○ manufacture
	  ○ transport and customs
	  ○ ethical sourcing
	  ○ sustainability
	• fabric testing by manufacturer:
	  ○ 1 to 5 grading
	  ○ durability
	  ○ stretch
	  ○ fireproofing
	  ○ utility
	• faults:
	  ○ yarn flaws
	  ○ fault lines when weaving
	  ○ dust/dirt marks or faults
	  ○ oil marks
	  ○ print/pattern fault
	  ○ holes/tears
	• threads:
	  ○ strength
	  ○ smooth/rough
	  ○ ply and count
	  ○ dye lots
	  ○ composition
	• handling requirements:
	  ○ drape
	  ○ texture
	  ○ elasticity
	• compatibility with design and construction:
	  ○ materials suitable for the tools/techniques to be used
	  ○ suitable for purpose of end item
	  ○ transparency
	  ○ weight
	  ○ colour
	  ○ longevity

	• dye suitability:
	  o different fibres dye differently
	  o different dye types
	  o different dye methods
	  o colourfast or fugitive
	  o light fastness
	  o fabric preparation methods.

TFK3.10	**Properties of fabric:**
	• fibre type, natural and man-made:
	  o staple fibre:
	  – not continuous lengths – spun into fibre
	  o filament mixtures:
	  – continuous length
	  – normally circular in cross section
	  – high length-to-width ratio
	  – man-made filament is often stronger than natural fibre
	• weight:
	  o can aid understanding of the feel of the fabric
	  o can influence other factors such as thickness, malleability and drape
	• thickness
	• natural stretch and man-made stretch.

TFK3.11	**Characteristics of types of fabric structures:**
	• woven fabric structures:
	  o simple structure
	  o compound/complex structure
	• knitted fabric structures:
	  o jersey
	  o rib
	  o purl
	  o interlock
	• non-woven fabrics, including felt, Vilene, faux leather and vinyl:
	  o fibre structure that is combined using heat, chemicals or pressure
	  o fabric properties can vary depending on fibre, finish and bonding process
	  o fibres can be in one direction or random to create webs or sheets
	  o can be single or multiple layers
	• finishes:
	  o mechanical
	  o chemical
	  o alter the structure of the fabric
	  o alter the look and feel.

TFK3.12	**The practical applications and limitations of recycled and reclaimed materials:**
	• repurposing of materials:
	  ○ applications (for example, changing purpose of product; use of dead stock)
	  ○ limitations (for example, might not be able to repeat designs; unpredictable in terms of lifespan; might restrict choice)
	• blending of recycled materials:
	  ○ applications (for example, blended fabric composition; weaving with blended materials)
	  ○ limitations (for example, cost can be higher; may be difficult to source; methods to produce are not always ecologically sustainable).

TFK3.13	**The types of textile and fashion-making processes and techniques:**
	• seams:
	  ○ French
	  ○ plain
	  ○ double stitched
	  ○ bound
	  ○ flat felled
	  ○ lapped
	  ○ welt seam
	  ○ overlocked seam
	  ○ raw edged seam
	  ○ glued
	• fasteners
	• linking
	• stitches
	• skiving
	• interfacing
	• embellishing and trimmings (for example, fringing, lace, piping, decorative stitches, tassels, studs)
	• embroidery
	• quilting
	• print:
	  ○ different printing methods
	• surface design
	• knit:
	  ○ machine or hand knit
	  ○ knit stitch types:
	  – rib stitch
	  – plain
	  – purl
	  – stocking stitch
	  – garter stitch
	  – casting on and off

	• weave:
	  ○ plain weave
	  ○ twill
	  ○ double cloth
	  ○ colour in weave
	  ○ warp winding
	  ○ shed, pick and beating
	  ○ weave finishing
	• dyeing:
	  ○ different techniques for different fibres
	  ○ prepare the textile/fibre
	  ○ various processes, including steaming, tie dye, dip dye, batik
	• cutting:
	  ○ machine
	  ○ hand
	• textile finishing:
	  ○ washing/scouring
	  ○ appearance enhancing:
	  – brushing
	  – calendaring
	  – embossing
	  – burnishing
	  – coating
	  ○ tactile enhancing
	  ○ performance enhancing.

TFK3.14	**The purpose and safe use of different tools and equipment:**
	• sewing machinery, including industrial, domestic and digital:
	  ○ purpose:
	  – stitching components together with thread
	• knitting machine:
	  ○ purpose:
	  – creates knitted fabrics, patterns and shapes
	• loom:
	  ○ purpose:
	  – produces woven fabrics
	• shuttle:
	  ○ purpose:
	  – carries weft across the loom
	• hank/yarn winder/warping mill:
	  ○ purpose:
	  – winds yarn
	• printing machinery:
	  ○ purpose:
	  – prints images and designs onto surfaces
	• cutting implements and machinery:
	  ○ purpose:
	  – cuts materials accurately and easily
	• sewing tools and accessories (for example, corner shaper, loop turner, seam ripper, tailor's awl):
	  ○ purpose:
	  – aids sewing process and speeds up tasks
	• leather tools and accessories (for example, awls, burnishing tools, creaser, beveler, punches):
	  ○ purpose:
	  – aids leather crafting
	• measuring tools:
	  ○ purpose:
	  – measuring dimensions of an item
	• forms, including mannequins and hat blocks:
	  ○ purpose:
	  – visualises garment or accessory in 3D
	  – used to construct a garment, toile or accessory
	• pressing tools and accessories:
	  ○ purpose:
	  – presses seams open, removes wrinkles and creases, to apply interfacing
	• dyes:
	  ○ purpose:
	  – colours fibres, yarn and textiles

	• safe use of different tools and equipment:
	  o wearing appropriate personal protective equipment (PPE) for the machine/tool being used
	  o wearing appropriate clothing when operating machines/using tools
	  o following appropriate health and safety legislation
	  o follow manufacturers' instructions on safe operation and storage of tools and machines
	  o ensured machine/tool is correctly set up before use and correctly switched off/stored after use
	  o be aware of surroundings/environment and potential hazards
	  o ensuring machine/tool is well maintained and needles/blades replaced/sharpened regularly
	  o safely store potentially hazardous consumables/sharps when not in use
	  o ensuring the material is secured to prevent movement whilst cutting and to maintain accuracy (for example, using fabric weights)
	  o work in a well-ventilated room (where appropriate)
	  o store and dispose of hazardous consumables safely and ecologically.

TFK3.15	**The types of roles and their responsibilities within the making process:**
	• designer/maker for creative disciplines:
	  o develops concept
	  o creates sketches, drawings and renderings
	  o creates samples
	• manufacturer:
	  o makes components for items
	  o assembles item
	• specialist (outsourced) service provider:
	  o provides a skillset unavailable in-house
	  o saves cost and time
	  o provides specialist equipment
	• technician:
	  o maintains smooth operation of tools and equipment
	  o repairs and services machinery
	  o provides technical support and advice
	• retail supplier:
	  o provides a range of materials and components to the general public
	  – usually supplied in smaller quantities at a higher price
	• trade supplier:
	  o provides materials and components to tradespeople
	  o often in larger quantities, usually at lower cost than retail.

TFK3.16	**Costing:**
	• operating costs:
	  ○ rent (for example, workspace, home, studio)
	  ○ utilities
	  ○ salaries
	  ○ materials, equipment and software licences
	  ○ promotion
	  ○ insurance (for example, public liability, professional indemnity)
	• tax liabilities:
	  ○ Value Added Tax (VAT)/sales tax
	  ○ National Insurance
	  ○ business rates
	• logistical costs:
	  ○ packing
	  ○ loading
	  ○ kimble tagging
	  ○ transportation
	  ○ cross border tax
	  ○ customs duty
	  ○ unloading and storage.

TFK3.17	**The principles of waste management:**
	• refuse:
	  ○ minimising waste by refusing to use non-recyclable products or environmentally unfriendly suppliers
	• reduce:
	  ○ reducing use of harmful chemicals, non-recyclable materials and wasteful processes
	• reuse:
	  ○ reusing materials where possible as opposed to disposal
	• repurpose:
	  ○ adapting product or material so it can be used for a different purpose
	• recycle:
	  ○ ensuring all resources are recycled where possible if they cannot be reused or repurposed.

TFK3.18	**The importance of reducing waste:** • lowers operating costs • contributes to a more sustainable business model • potential to produce more products from materials • reduces unnecessary waste to landfill • conservation of resources • climate change.

TFK3.19	**Different methods to mitigate waste where options to reduce have been exhausted:** • optimising usage of materials through strategic planning • creation of new materials such as blended fabrics • reusing materials • repurposing materials • designing product range to incorporate recycled materials for a range of end uses • using waste materials for packaging • recycling where appropriate to create new products.

Performance Outcome 4: Use selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the brief

What skills do students need to demonstrate?

TFS4.1 Create a production schedule that details activities, timescales and costings:
• determine all activities:
  ○ design phase
  ○ production phase
  ○ product to client
• create a timeline for all activities
• provide accurate costings
(D1, E3, M8, M9, M10,)

TFS4.2 Interpret the requirements of specifications, pattern and/or instructions:
• identify required dimensions:
  ○ final item size and scale
  ○ allowances
  ○ tolerance
• review and assess the resources required:
  ○ fabric/cloth choices
  ○ pattern repeats
  ○ embellishments and trimmings
  ○ yarn/thread
• review and assess construction methods and processes required
• identify industry symbols
• review and assess finishing requirements
(M2, M3, M7)

TFS4.3 Apply accurate measurements to the requirements of the specification:
• identify and measure accurately:
  ○ critical points of measurement
  ○ shape
  ○ design
• select and apply appropriate measurement and marking tools
• apply correct units of measurement
• produce a cutting list where appropriate
• ensure measuring devices and equipment are clean and to hand (for example, measuring jugs for dyestuffs, correct size screens for printing, correct length yarns and patterns for weaving)
(E3, M1, M2, M3, M4)

TFTS4.4 Prepare a workspace and assemble components:

- tools, equipment and machinery:
  - check tools, equipment and machinery to ensure they are safe and in working order, for example machine needles are correct for the materials to be sewn, looms correctly threaded, plugs and power sources
- cleanliness:
  - working surfaces are free of grease and debris (for example, grease, lubricant, physical debris such as pins or stray threads)
- components:
  - components are in correct order of make
  - specification drawings and instructions for sewing, printing, weaving, embellishing are clear

TFS4.5 Select and use tools, equipment and machinery safely:

- select and prepare tools, equipment and machinery to be used
- operate tools, equipment and machinery and their attachments
- follow manufacturers' instructions
- adjust tools and equipment to suit different materials
- ensure accordance with company policies and procedures
- safely store tools, equipment and machinery after use

(D1)

TFS4.6 Apply selected processes and techniques to realise ideas by making and finishing the items within expected tolerances:

- prepare a workspace:
  - ensure that sufficient resources are available and ready
  - work area is kept clean and tidy
- apply methods to minimise waste
- accurately prepare components in accordance with measurement and specification of item
- join/assemble components of items using appropriate techniques:
  - ensuring accuracy
  - fault check during each stage of the process
- position and attach embellishments as appropriate to the discipline:
  - inspect embellishments for faults
  - accurately position and attach
  - fault check during each stage of the process
- finish items using selected techniques within expected tolerances
- store and dispose of materials safely and ecologically in accordance with specialist workshop policies and procedures

(D1, M1)

TFS4.7 Assemble and professionally finish components using appropriate techniques according to discipline, including the accurate attachment of fastenings, trimmings:

- joining techniques:
  - hand and machine stitching
  - looping
  - gluing
  - weaving
  - knotting
  - tying
  - fusing
- fastenings and trimmings:
  - zips
  - buttons
  - piping
  - lace
  - embroidery
  - bias binding
  - studs and eyelets

TFS4.8 Finish item(s) selecting techniques according to discipline:

- quality control:
  - meeting original specifications
  - professional make and finish
  - expected parameters of tolerances
  - accurate fit and shape
  - correct labelling
  - accurate steaming and pressing
  - correct presentation according to discipline (for example, sewn garments, knit, weave, print fabric lengths)

TFS4.9 Critically review finished item:

- inspect all components and finished item
- identify any faults
- assess overall quality of all components and finished item against expected tolerances
- apply methods to correct faults or quality issues
- consider how identified quality areas can be applied to future tasks and products

TFS4.10 Store and dispose of materials safely and ecologically:

- reuse and repurpose scrap materials
- store usable excess material appropriately and safely
- dispose of waste materials safely, according to manufacturers' instructions and/or workshop policies and procedures

TFS4.11 Identify and apply required protection of product:

- select and apply appropriate packaging, considering:
  - presentation purpose
  - protection required
  - sustainable materials

(D1, EC3)

What underpinning knowledge do students need?	

TFK4.1	**The purpose of industry recognised quality standards in textile and fashion making:**
	• standards are the agreed way of doing something:
	  ○ different standard setting bodies such as British Standards Institute (BSI)
	  ○ requirements may vary depending on product produced
	• manages expectations
	• enhances consumer protection and confidence
	• international standards ensure products and services are comparable across borders.

TFK4.2	**The application of legislation, regulation, policies and procedures to ensure compliance with health and safety in textile and fashion making:**
	• legislation:
	  ○ Health and Safety at Work etc. Act 1974:
	  – undertaking risk assessments to identify hazards
	  – ensuring only adequately trained employees use equipment
	  – providing a safe working environment that is properly maintained
	• regulations:
	  ○ The Control of Substances Hazardous to Health Regulations 2002:
	  – using appropriate control methods
	  – storing chemicals correctly
	  – using data sheets to identify potential hazards and understanding the requirements for safe practice for handling, use and disposal of harmful substances
	  ○ The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013:
	  – maintaining an accident book
	  – recording incidents and near misses
	  – reviewing accidents and identifying trends
	  ○ The Manual Handling Operations Regulations 1992:
	  – following correct guidance and training
	  – taking reasonable care over own and others' health and safety
	  ○ The Personal Protective Equipment (Enforcement) Regulations 2018:
	  – suppling appropriate personal protective equipment (PPE) to employees
	  – selecting equipment and PPE suitable to the task
	  – reporting of damaged or worn PPE

	• standard workplace systems, policies and procedures:
	  ○ providing a qualified first aider
	  ○ providing working instructions
	  ○ undertaking regular fire drills
	  ○ providing machinery safety guidance
	  ○ creating fair internal policies and procedures for all personnel
	  ○ providing standard operating procedure (SOP)
	• risk management and prevention:
	  ○ undertaking risk assessments for specific processes:
	  – fire risk
	  – air quality, including protection from vapours, dust and fibres
	  – machinery risks
	  – noise levels for the protection of hearing
	  – temperature control for working conditions
	  – safe disposal of materials/waste
	  ○ helping to reduce workplace injuries:
	  – sharps injury
	  – trips and falls
	  – burns from irons, steam and chemicals
	• employer and employee legal obligations, rights and responsibilities:
	  ○ employer:
	  – abiding with employment law
	  – providing health and safety management
	  – providing workplace policies and procedures
	  – providing appropriate PPE
	  ○ employees:
	  – following training and working instructions
	  – taking reasonable care of self and others
	  – reporting any accidents or issues
	  – wearing appropriate PPE
	• ethical trading standards:
	  ○ implementing company policies and procedures:
	  – modern slavery
	  – working conditions
	  – living wage and benefits safety measures
	  – child labour
	  – sustainability
	  – equality and diversity
	  – inclusive workplace
	  – protected characteristics
	  – discrimination law
	  – British Fashion Council's diversity, equity and inclusion policy
	• environmental policy:
	  ○ environmental and sustainability policy

	○ considering steps such as: – freight reduction – sourcing locally – ethical sourcing – circular economy.
TFK4.3	**How to read working drawings and specifications** • tools and equipment for producing accurate specification drawings: ○ basic solid lines ○ 'blueprint' techniques ○ front, back, side and detail views • use of CAD for specification drawings (for example, Adobe suite): ○ representation of seams, darts, fastenings and trims (for example, zips, piping, types of pockets, belts, ties) • conventions for layout of a specification sheet: ○ written instructions (for example, grading notes, centre front, centre back) ○ points of measurement ○ special construction notes (for example, stitch type to be used, twin needle, top stitching ○ attached fabric swatches and trims • labelling instructions.
TFK4.4	**The principles of measuring accurately:** • interpreting size and scale for fabrics, garments and accessories • identifying points of measurement • applying correct units of measurement • using correct measuring tools for the task • using the correct marking tools for the task • identifying acceptable tolerances.
TFK4.5	**The importance and impact of accuracy and acceptable tolerances when realising the brief:** • importance: ○ ensuring fit for purpose ○ meeting defined parameters ○ ensuring accurate technical information ○ ensuring correct garment sizes to exact size specifications • Impact of inaccuracy: ○ errors appear in final textile pattern or design ○ cost implications caused by inaccurate estimations ○ affects the overall look and function of the item ○ unsuitable final outcome for client ○ tolerance levels can vary from handmade bespoke items to mass-produced goods.

TFK4.6	**Principles and cost of waste management** • reuse of material offcuts • ethical disposal of dyes and chemicals (for example, water pollution, impact on wildlife and local communities) • cost implications of dealing with waste • environmental impacts of waste from textiles and fashion industries (for example, greenhouse gases, landfills) • achieving a circular economy • EU ecolabelling.
TFK4.7	**Types of common faults and methods for rectification:** • materials: o common faults: – fault lines – pattern print errors – soiled materials – rips/tears/holes o methods for rectification: – replacement from manufacturer if fault detected prior to making process – use new section of material, recycling faulty section if possible – may be able to accept fault if it is natural, such as slub, or can be made a feature on the finished item – launder material to remove stains if possible – weave knot into warp or at back so it does not show – use different part of yarn if it cannot be woven in • processes and techniques: o common faults: – unsuitable joining of components – poorly cut components – incorrect construction o methods for rectification: – retraining of user – unpick/unravel/un-weave and restart process – start process again, recycling where possible • tools and equipment: o common faults: – blunt tools – errors on measurement tools (for example, stretch in fabric tape measure, cut and nicks in tape) – machine malfunction – incorrect use of tool or equipment – incorrect maintenance of tools and equipment o methods for rectification: – keep tools well maintained.

TFK4.8	**Sewn products and leather** • seaming, fringing, blanket stitches • hand stitches • seam types • interfacing • trimming • stitch/embroidery • print/surface • piping • knit • dyeing • cutting (hand and by machine) • finishing (for example, washing, rubbing, felting, pressing).

TFK4.9	**Textiles, leather and faux leather**
	• drafting basic weave structure (for example, plain, twill, jacquard)
	• warp winding
	• counting and tying ends
	• understanding the process of shedding, picking and beating
	• casting on/off
	• binding
	• printing:
	  ○ screen printing
	  ○ block printing
	  ○ digital printing
	• dye sublimation
	• technical textiles
	• smart fabrics.

TFK4.10	**The types of measurements needed to calculate resource requirements:** • warp length • yarn/thread requirements • stitches per square inch • width and length of cloth/fabrics • body size measurements • yardage requirements, including linings and interfacings • embellishments • fastenings (for example, zips, buttons, press studs, hooks and eyes, buckles, lacing) • resources for all manufacturing processes • pattern repeat • impact of grading on resources.

TFK4.11	**The stages of the assembly process:**
	• design stage:
	  ○ creation of designs, drawings, illustrations and technical packs to meet the design brief
	  ○ sampling
	  ○ toile
	  ○ creation of sample product
	• pattern production:
	  ○ patterns created using blocks, paper patterns or digital patterns
	• assembly sequence:
	  ○ defined order in which to sew item together
	• lay plan:
	  ○ positioning pattern pieces onto fabric in an economical way
	• cutting:
	  ○ all items cut by hand or machine
	• bundling:
	  ○ all cut pieces grouped into sets for sewing
	• sewing:
	  ○ all cut pieces joined together using defined techniques
	• finishing:
	  ○ attaching embellishments and fastenings to item where specified
	• quality control:
	  ○ item checked against specification to ensure measurements are accurate, stitching and any finishes are correctly sewn and faults are identified.

TFK4.12	**The purpose and application of shaping techniques:**
	• purpose:
	  ○ controls the fit and style and of a garment
	  ○ creates 3D texture and design
	  ○ provides a decorative element in design
	• application:
	  ○ gathering:
	  – two sewn lines that can be gently pulled to ruffle fabric to create fullness
	  – decorative way to distribute fullness
	  ○ pleating:
	  – folds in fabric that are heated or sewn into place
	  – different pleat techniques create different end results
	  – can be pressed or unpressed
	  – can create a smooth slimming line or fuller shape
	  ○ shirring:
	  – sews stretched elastic into garment rows
	  – creates elasticated panels
	  – can be used as decorative feature

	○ darts: – used to create shape around body areas – provides ease – used to fit garment to body shape ○ tucks: – fold of fabric stitched down the length – creates fullness – provides decorative effect ○ godet: – a triangular component inserted into an item – adds width and volume – can be a different colour or fabric ○ piping: – fabric stitched around a cord and inserted into a seam – can be a decorative feature – creates structure ○ boning: – plastic or metal rods inserted into fabric – creates structure and maintains shape ○ padding: – creates structure – can change the silhouette of garment – added into quilting for warmth, weight or comfort ○ moulding material: – heat or vacuum – wet moulding leather – creates structure – can be shaped around a form, particularly in millinery manufacturing.
TFK4.13	**The use of different tools and equipment appropriate to chosen discipline:** • types of sewing machine, needle systems • sewing work aids and attachments • overlocker • knitting machine • loom • hank/yarn winder • silk screen • lockstitch machine • blind hemmer • scissors • snips • corner shaper • loop turner • measuring tape • mannequins

	• specialist computer programmes and software • 3D printers.

TFK4.14	**The function of loom equipment:**
	• warp beam
	• shafts
	• heddles
	• shuttle:
	  o a bobbin that holds weft yarns
	  o shuttle is thrown through weaving shed across the warp, using your weft yarn to create your woven fabric
	• beater and reed:
	  o beater is used to push the weft yarn securely into place
	  o reed separates the yarn and determines how tight or loose the weave structure will be.

TFK4.15	**The stages of dressing a loom:** • warping up • beaming the warp • winding the warp on • threading the warp • reeding the warp • attaching the warp to the front beam.

TFK4.16	**The types and characteristics of casting on and off methods:**
	• casting on:
	  o wrap cast:
	  – quick and easy
	  – stretch
	  – cast edge does not detract from knitting
	  o knit cast on:
	  – all round method
	  – easy to form
	  – contains some stretch
	  o cable cast on:
	  – firm edge
	  – even and cable-like
	  – no stretch
	  o long tail cast on:
	  – counts as a row of knitting
	  – all round method
	  – some stretch
	  – not firm
	• casting off:
	  o stretch bind off:
	  – used where stretch is needed

	○ three-needle bind off: – creates a seam between two pieces – stretchy ○ tubular bind off: – creates neat edge for ribbing – stretchy ○ picot bind off: – decorative finish – can be time consuming – uses more yarn than other methods.
TFK4.17	**The importance of maintaining hand tools, powered an**d plant tools and equipment, and immediate work environment: • reduces the likelihood of injury from tools and trip hazards • reduces costs as frequent replacement is not required • maintains efficiency of hand tools • ensures compliance with legislation and regulations.
TFK4.18	**The principles of settings, calibration, maintaining and cleaning hand powered tools, plant tools and equipment:** • settings and calibration: ○ machinery settings ○ correctly threading machinery ○ calibration testing ○ using correct consumables for material • working within own limits of competence when completing regular checks and maintenance • following manufacturers' instructions • escalating any issues or faults to an approved technician or manufacturer • storing tools and equipment safely.
TFK4.19	**Requirements for labelling in textile and fashion making:** • composition: ○ legal requirement within The Textile Products (Labelling and Fibre Composition) Regulations 2012 that the label must state the percentage of each fibre within the material ○ some terms, such as 100% cotton, are legally protected • country of origin: ○ not a legal requirement to display country of origin ○ fraudulent origin labels are illegal • flammability: ○ nightwear, childrenswear and baby clothing must meet flammability standards BS 5722 ○ flammability requirements can vary worldwide • care requirements: ○ not a legal requirement in UK

	○ GINETEX care symbols: – known worldwide and trademark protected – standard symbols – washing, bleaching, drying, ironing, professional care – Clevercare messages.
TFK4.20	**Factors to consider when presenting products to client:** • presentation methods: ○ trade show ○ portfolio of products ○ via social media/website ○ via email or postal communication ○ exhibitions ○ via in-person presentation ○ via presentation online ○ catwalk ○ showroom • protection of product: ○ fold item or hang to minimise creasing ○ protect embellishments to reduce damage ○ keep dry and clean ○ free from insects such as moths • packaging: ○ protects products ○ promotes product and brand ○ use of sustainable materials.

Performance Outcome 5: Review and evaluate the activities and development against the original brief or proposition to refine product(s)

What skills do students need to demonstrate?

TFS5.1 Evaluate the extent to which the finished product meets the design brief:
• apply success criteria to evaluate the finished product:
  ○ determine if the product was completed within agreed timescales
  ○ identify variance in the expenditure against set budget
  ○ determine quality of the finished product:
  – fitness for purpose
  – design interpretation/meets client requirements
  – aesthetic appeal
  – sustainability of the design process and finished product
  ○ feedback from client was responded to
  ○ end-user (client) satisfaction
  ○ comparison of evaluation findings against student design
  ○ reflection on outcome and future developments
  ○ record and document evaluation
(D5, E1, E3, E4, E5, M2, M5, M6, M8, M9)

TFS5.2 Review and assess the final outcome against the production schedule:
• apply reflective practice to review the final outcome:
  ○ review efficiency and waste with considerations towards towards the selection and application of:
  – raw materials
  – processes and techniques
  – tools and equipment
  – quantities of materials ordered
  – planning and use of time
• ethical and sustainable approaches to the design process
• review the quality with consideration towards:
  ○ suitability of raw materials
  ○ accurate design decisions
  ○ processes and techniques employed to achieve desired effect
  ○ tools and equipment applied to achieve desired outcome
  ○ effectiveness of quality assurance tests and processes
• cost effectiveness with consideration towards:
  ○ sourcing and quality of raw materials
  ○ efficient planning and project management
• compare reflective practice findings against production schedule
• record and document findings
(D3, D4, E1, E3, E4, E5, M2, M9, M10)

TFS5.3 Establish if design brief has been achieved and ascertain areas for future improvement:

- implement appropriate evaluation methods with the end user, to determine:
  - levels of satisfaction
  - fitness for purpose
  - areas for improvement
  - evaluation methods may include:
    - customer satisfaction survey
    - focus groups
    - user testing
- record and document evaluation findings
- draw conclusions and express opinions using evaluation findings to identify areas for future improvement

(D3, D4, D5, E1, E2, E4, E5, E6, M5, M6, M10)

TFS5.4 Reflect on outcome, update digital portfolio and consider actions for future development:

- reflect, record and document findings of reflective practice including:
  - examples of good practice
  - identified improvements to design processes
  - areas for future improvement
  - ideas for future innovation

(D2, D4, E3, E4, E5)

What underpinning knowledge do students need?	

TFK5.1	**TFK5.1 How to assess the final product against the original brief and production plan:**
	• success criteria:
	  ○ timescales – completed on time to agreed deadline
	  ○ budget – completed within set and agreed budget
	  ○ quality:
	  – raw materials used
	  – processes and techniques applied
	  – tools and equipment used
	  – design interpretation
	  ○ fitness for purpose
	• meeting success criteria:
	  ○ completed on time
	  ○ completed within set budget
	  ○ dimensions are suitable
	  ○ fitness for purpose (ergonomics, waterproof), meets customer requirements
	  ○ aesthetically appealing
	  ○ feedback from client was responded to

	• meets end-user requirements:
	  o customer satisfaction survey
	  o focus groups
	  o user testing
	  o meets client's satisfaction:
	  – review client feedback from each stage of design
	  – final client interview
	  – client satisfaction survey.

TFK5.2	**How reflective practice is used within the design process to inform decision making, for example, revisions, justifications, choices:**
	• reflective documents – record of ideas, learning, feelings, observations, thoughts and emotions:
	  o provides rationale for decision-making process
	  o challenges own decision-making process
	  o considers ideas not taken forward to inform further development or revisions
	  o reviews assumptions that may later be tested
	  o remains open-minded to new and different approaches
	• peer groups – discussion and feedback with colleagues or other practitioners:
	  o provides fresh insight into decision making
	  o challenge own assumptions
	  o offers benefits of others' experiences and sharing good practice
	• formative evaluation – ongoing reflection throughout the process:
	  o reviews for suitability of selected processes, materials, tools and techniques at each stage of design
	  o provides opportunity for timely revision
	  o implements feedback from client, customer and end user at each stage
	• summative evaluation – final reflection providing unbiased and evidence-based conclusions:
	  o reviews the outcome of decisions and choices
	  o identifies possible improvements
	  o identifies good practice.

TFK5.3	**How to use reflective practice to plan progress and future development:** • use and document reflective practice to: • identify improvements in processes and techniques used to be applied in future developments • highlight good practice demonstrated that can be shared and applied in other projects • improve the quality of finished product by reviewing at milestones throughout the process • encourage innovation and experimentation • reduce the potential for mistakes by understanding each step in the process • improve the efficiency of design process

	• identify the suitability of tools and techniques to achieve the required outcome • increase understanding of the concept to finished product process • develop confidence with the application of repeated processes.

TFK5.4	**How to apply knowledge gained to future projects:**
	• plan:
	  ○ plan required improvements
	• do:
	  ○ standardise and optimise processes
	• review:
	  ○ analyse results
	  ○ review costs
	• act:
	  ○ review the solution
	  ○ capture data at each stage of production.

Scheme of Assessment: Textiles and Fashion Maker

There are two task assessments for this Occupational Specialism.

Both tasks are completed during a window set by Pearson, during which Providers schedule supervised assessment sessions. Task 1 activity 1 is timetabled by Pearson.

Task 1 is an extended 'Design and Make' task that consists of nine substantive activities.

Task 2 is a Make to a specification task that consists of substantive activities.

These tasks are important to ensure students can demonstrate threshold competence and are able to evidence all the skills required by the Performance Outcomes.

Occupational Specialism Task 1 – Design and Make
Internally assessed, externally moderated project: 73 hours and 50 minutes **192 marks**
Performance Outcomes In this task students will: **PO1** – Analyse, interpret and respond to a creative proposition or a given brief taking on board purpose and end user PO2 – Refine and communicate ideas for product development **PO3** – Experiment with materials, processes, tools and techniques to determine suitability for purpose **PO4** – Use selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the brief **PO5** – Review and evaluate the activities and development against the original brief or proposition to refine product(s).
Assessment overview Task 1 is made up of nine substantive activities. • Activity 1: Interpret the brief and conduct research • Activity 2: Garment ideas and experimentation with 2D/3D textiles and fashion materials, techniques and processes • Activity 3: Presentation, feedback and refinement of ideas • Activity 4: Pitch preparation • Activity 5: Pitch presentation • Activity 6: Final design testing phase • Activity 7: Produce final technical drawings, final costings and final production schedule • Activity 8: Make final garment • Activity 9: Evaluation Students respond to a given scenario to complete task 1. They are assessed on their application of the skills listed for the Performance Outcomes.

Students are not assessed against specific 'knowledge' outcomes but are expected to draw on and apply related knowledge to ensure appropriate outcomes when applying the skills in response to an assessment scenario.

Students undertake the assessment under supervised and controlled conditions.

The assessment takes place over multiple sessions, up to a combined duration of 71 hours and 50 minutes.

The task outcomes consist of a physical item or items that have been designed and made, supported by a portfolio of evidence submitted electronically.

This task is set by Pearson and marked by the provider. Pearson will externally moderate the marks.

Occupational Specialism Task 2 – Make to a specification

Internally assessed, externally moderated project: 21 hours

66 marks

Performance Outcomes

In task 2 students will:

PO4 – Use selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the brief

PO5 – Review and evaluate the activities and development against the original brief or proposition to refine product(s).

Assessment overview

Task 2 is made up of six substantive activities.

- Activity 1: Cut out the component parts and prepare for making
- Activity 2: Apply the surface treatment/decoration to each pocket (one quilted, one embroidered) and attach the linings
- Activity 3: Fuse the interlining to the main body of the bag and attach the two pockets, one to each side of the bag
- Activity 4: Make up the main body of the bag, make up handles and attach to bag
- Activity 5: Make up the bag lining, attach to bag and finish, undertake final quality checks
- Activity 6: Evaluation.

Students respond to a given scenario including a technical specification to complete a technical making task or tasks. They are assessed on their application of the skills listed for the Performance Outcomes.

Students are not assessed against specific 'knowledge' outcomes but are expected to draw on and apply related knowledge to ensure appropriate outcomes when applying the skills in response to an assessment scenario.

Students undertake the Make to a specification task under a combination of supervised and controlled conditions.

The assessment takes place over multiple sessions, up to a combined duration of 21 hours.

The Make to a specification task outcomes consist of physical objects that have been made to a set specification, supported by a portfolio of evidence submitted electronically.

This assessment is set by Pearson and marked by the provider. Pearson will externally moderate the marks.

Administration

Providers must follow the guidance in the following:

- General Administrative Support Guide
- Administration Support Guide for the specific Technical Qualification Occupational Specialism (if applicable)

These are located on the Training and Admin Support webpage.

Performance Outcome		Weighting	
		Raw marks	% of total marks
PO1	Analyse, interpret and respond to a creative proposition or a given brief taking on board purpose and end user	44	17.2
PO2	Refine and communicate ideas for product development	33	12.8
PO3	Experiment with materials, processes, tools and techniques to determine suitability for purpose	60	23.3
PO4	Use selected materials and apply appropriate processes, tools and techniques, to realise ideas and fulfil the brief	103	39.9
PO5	Review and evaluate the activities and development against the original brief or proposition to refine product(s).	18	7.0

Resources for the delivery of Textiles and Fashion Maker

Providers are required to have the following resources to deliver this OS:

- IT suite with access to the internet, design software (for example, Canva, SketchUp, Blender, CAD, Adobe Creative Cloud (Photoshop/Illustrator), PowerPoint, InDesign, Inkscape, CLO 3D) and digital facilities, including image scanner
- online subscriptions (Crafts magazine, Embroidery magazine, Creative Process, Fashion Industry, Vogue.com. GQ-magazine.co.uk. idonline.com. anothermag.com. Textileinstitute.org)
- relevant subject-specific books, journals
- teachers with qualifications and/or experience in the textiles and fashion sector
- a curriculum team with experience and knowledge that span the breadth of the qualification content.

Assessment Task	Resource required
1 'Design and Make' task	• traditional drawing materials media (for example, paper, pencil, ink, paints, collage materials) • digital portfolio • photographic equipment • fashion workroom containing standard pattern paper/card, mannequins, materials, fabrics, dyes, yarns, tools, equipment and machinery required to cut, manufacture, finish and press work and make selected garment(s). • textiles workshop containing standard yarns and equipment for print, weave, knit and embellishment. • computer, projection screen, presentation software (for example, PowerPoint, Prezi) • audio-visual recording equipment • clock/phone timer • calculator • any props or extra materials to enhance the display of work. Pearson-provided resources: • reference list template • experiment recording templates • health and safety record template • peer feedback template • costings template • production plan timeline template • client feedback template • final testing materials record • health and safety record • contingency plan template

Assessment Task	Resource required
	• final design making record template • evaluation template. The specificity of material quantities will be released to providers prior to assessment.
2 Technical 'Make' task	• specification drawing • lay plan • quilting instructions • embroidery instructions • sewing machine with appropriate feet • embroidery machines • overlocker • steam press • cutting tables • pattern weights • stud and eyelet machine • shears/scissors • pins • tailor's chalk • fabrics, wadding, linings and interlinings • materials • linings and interlinings • accessories and fastenings • Task 2 digital portfolio. Pearson-provided resources: • evaluation template. The specificity of material quantities will be released to providers prior to assessment.

Textiles and Fashion Maker global resource list

- subject-specific books, magazines, journals and other print materials
- cutting tables
- mannequin/tailor's stand
- various sized garment pattern blocks
- pattern paper and card, pattern notchers, tracing wheels, fabric weights, tailors chalk
- toile calico, a range of fabrics (for example, cotton, silk, polyester, soluble embroidery materials, wadding)
- scrap fabrics for experimentation (for example, recycled fabrics)
- measuring implements (for example, tape measure, ruler, French curve, set square)
- cutting implements (for example, blades, scissors, fabric shears)
- dyeing (for example, dyes, fixative, screens, squeegees, digital weighing scales, measuring containers, dye vats, heat source for dye)
- washing machine/tumble dryers/drying racks
- materials (for example, yarn, thread, woven fabric, leather, interfacing, linings, adhesives)
- insertions (for example, zips, buttons, studs, piping, bindings)
- embroidery hoops, threads, hand needles, embroidery feet
- embellishments (for example, sequins, beads)
- tools and equipment (for example, pins, corner shaper, pressing tools)
- sewing machines, range of machine feet, overlockers
- knitting needles, knitting machines and associated accessories
- weaving looms, hand weaving frames and needles
- felt making fleece, needles
- printing materials, tools and equipment (for example, mono printing inks/slabs, rollers, screen bed, screen printing inks and associated accessories, washing out facilities/equipment)
- steam pressing machine and accessories (for example, sleeve board, velvet board, pressing cloths, irons)
- steamer, batik pot and tjanters, wax
- heat press and heat transfer paper, heat transfer dyes
- sewing threads, knitting and weaving yarns
- Personal Protection Equipment (PPE) (for example, eye protection, gloves, aprons, masks).

5 Technical Qualification grading, T Level grading and results reporting

How the qualification is graded and awarded

Calculation of the Technical Qualification grade

The Technical Qualification components are awarded at the grade ranges shown in the table below.

Component	Available grade range
Core	A* – U
Occupational Specialist	Unclassified, Pass, Merit, Distinction

The Core Component uses an aggregation of points from each of the three Core Assessments to calculate the A* to E.

Students whose level of achievement for either component is below the minimum judged by Pearson to be of sufficient standard will receive an unclassified U result.

Awarding the Core Component

Grade boundaries will be set for each sub-component (Core Examinations and Employer Set Project) in each series in which they are offered through a process known as awarding. Awarding is used to set grade boundaries and ensure that standards are maintained over time. This is important as we must ensure that students have the
same opportunity to achieve, regardless of the assessment opportunity.

Uniform Mark Scale

Students' raw sub-component marks will be converted to a Uniform Mark Scale (UMS). The UMS is used to convert students' sub-component 'raw' marks into uniform marks. This is done to standardise marks from one series to another as assessments may vary in difficulty. For example, a student who achieves the lowest mark worthy of a C grade in the Employer Set Project in one series will receive the same uniform mark as a student achieving that same grade and level of performance in another series, regardless of their raw marks.

The maximum number of uniform marks available for each sub-component, and the uniform marks relating to each grade boundary, are fixed. These are shown below:

Grade	Core Exam	Core ESP	Core Overall
Maximum	**240**	**160**	**400**
A*	216 – 240	144 – 160	360 – 400
A	192 – 215	128 – 143	320 – 359
B	168 – 191	112 – 127	280 – 319
C	144 – 167	96 – 111	240 – 279
D	120 – 143	80 – 95	200 – 239
E	96 – 119	64 – 79	160 – 199
U	0 – 95	0 – 63	0 – 159

Calculation of the T Level grade

The T Level grade look-up table shows the minimum thresholds for calculating the T Level grade, subject to successful completion of all elements. The T Level grade look-up table will be kept under review over the lifetime of the T Level and is available under the Quality Assurance and Assessment tab linked from this page Training and admin support | Pearson qualifications.

Students who do not meet the minimum requirements for a T Level to be awarded will not be certificated. They may receive a Notification of Performance for individual components.

To be awarded the T Level, a student must complete both components and achieve a minimum of a grade E in the Core component and a Pass in the Occupational Specialism component. In addition, they must successfully complete the other elements of the T Level as required by the Institute for Apprenticeships and Technical Education (IfATE) and the T Level Panel, such as 315 hours of industry placement and Level 2 in English and maths.

Students whose level of achievement for either component is below the minimum judged by Pearson to be of sufficient standard will receive an unclassified (U) result.

Students who do not meet the minimum requirements for a T Level to be awarded will not be certificated. They may receive a Notification of Performance for individual components.

Results reporting

The *T Level Technical Qualification in Craft and Design* forms the substantive part of the T Level programme.

The T Level programme includes other elements that are required to be completed successfully for students to be awarded the T Level from IfATE. IfATE will provide T Level certificates to students who successfully complete all elements of the T Level programme.

IfATE will issue T Level results on Level 3 results day in August.

Pearson are not required to issue Technical Qualification certificates to students; instead we will provide component results for assessments that students undertake.

Pearson will issue component results on the results day designated for each assessment window.

6 Entry, delivery and assessment information

Introduction

This section focuses on the key information to deliver the *T Level Technical Qualification in Craft and Design*. It is of particular value to programme leaders and examinations officers, who must ensure appropriate arrangements are made for assessments.

Student registration

Shortly after students start their T Level programme, you must make sure they are registered for the Technical Qualification. You are required to register students as outlined in our Key Dates Schedule, which is published annually on our Training and Admin Support webpage.

At the point of registration onto the Technical Qualification, we will ask you to confirm the Occupational Specialist component(s) the student has chosen to study, or as a minimum provide an indication.

Students can only be formally assessed for a qualification on which they are registered.

If a student's intended qualifications change – for example, if a student decides to choose a different Occupational Specialism – then the Provider must transfer the student appropriately.

Transferring between T Levels

Some students may switch between T Levels. During Year 1, Providers should consider the degree of overlap between the two T Levels and the remaining time pre-assessment, to determine if transfers should be permitted.

For funding purposes, it is important that students have decided their T Level and Occupational Specialism by the end of their first year.

T Level Core assessments vary in terms of content coverage, duration, and method, and therefore attainment from one T Level cannot count towards another.

Programme delivery

Providers are free to deliver this Technical Qualification using any form of delivery that meets the needs of their students. We recommend making use of a wide variety of modes, including direct instruction in classrooms or work environments, investigative and practical work, group and peer work, private study, and e-learning.

Assessment arrangements

Availability of live assessment

The assessments for the *T Level Technical Qualification in Craft and Design* will be scheduled annually as shown in the table below:

Annual Series for Media, Broadcast and Production					
Component	**First assessment**	**Month(s)**	**Window/ set date**	**Exam type**	**Paper/ on-screen**
Core Examination	2025	June November	Set date and time	Written examination	Paper
Employer Set Project	2025	May November	Window	Task	Paper
Occupational Specialist Project*	2026	March-May	Task specific: window/set date and time	Task	Paper

Annual assessment dates for the Technical Qualification are published in the Key Dates Schedule, which is available on the Training and Admin Support webpage. Each Technical Qualification has unique dates for each assessment and the window for the Occupational Specialist Project varies depending on the Technical Qualification, therefore refer to the Key Dates Schedule for the qualification you are delivering.

In developing an overall plan for delivery and assessment for the qualification, teachers need to consider the order in which the content is delivered and when the assessments will take place.

Students must be prepared for external assessment by the time they undertake it. In preparing students for assessment, teachers must take account of required learning time, the relationship with other external assessments and opportunities for retaking.

Language of assessment

Assessment of this qualification is available in English. All student work must be in English. This does not affect special requirements.

Student assessment entry

Students must be entered into an assessment window, either for the Core component or the Occupational Specialist component, as outlined in our Key Dates Schedule.

For the Occupational Specialist component, you will need to make an entry for the window the student wishes to sit the assessment in.

Resit arrangements

As per the Ofqual Technical Qualification Handbook, there is no specific resit window permitted. However, students will be able to resit in any assessment window following their first sitting.

Students may resit:

- to improve grades
- the Core Examinations
- the Employer Set Project
- the assessments for an Occupational Specialism, or
- any combination of these.

To access a resit opportunity, you will need to make an entry for the window you require the student to resit the assessment in; see *student assessment entry* above. Resits can take place up until two academic years after the end of the final academic year for the cohort within which the relevant student is included.

Access to qualifications and assessments for students with disabilities or specific needs

Equity and fairness are central to our work. Our *Equality, Diversity and Inclusion* policy requires that all students should have equitable opportunity to access our qualifications and assessments, and that our qualifications are awarded in a way that is fair to every student.

We are committed to making sure that:

- students with a protected characteristic (as defined by the Equality Act 2010) are not, when they are undertaking one of our qualifications, disadvantaged in comparison to students who do not share that characteristic
- all students achieve the recognition they deserve for undertaking a qualification, and that this achievement can be compared fairly to the achievement of their peers.

For students with disabilities and specific needs, the assessment of their potential to achieve the qualification must identify, where appropriate, the support that will be made available to them during delivery and assessment of the qualification.

Providers must deliver the qualification in accordance with current equality legislation. For full details of the Equality Act 2010, please visit www.legislation.gov.uk.

Further information on access arrangements can be found in the Joint Council for Qualifications (JCQ) document *Access Arrangements, Reasonable Adjustments and Special Consideration for General and Vocational Qualifications*.

Special requirements

Some students may have special needs during their learning and Technical Qualification assessments. In such cases, Providers can apply for special requirements on their behalf.

For further information Providers should refer to the dedicated special requirements webpage. Special requirements include:

- reasonable adjustments
- access arrangements
- special consideration
- modified formats.

Reasonable adjustments to assessment

A reasonable adjustment is made before a student takes an assessment to ensure the student has fair access. In most cases, this can be achieved through a defined time extension or by adjusting the format of evidence. We can advise you if you are uncertain as to whether an adjustment is fair and reasonable. You need to plan for time to make adjustments if necessary.

Reasonable adjustments can help reduce the effects of a disability or difficulty that puts the student at a substantial disadvantage in an assessment, in order to enable them to demonstrate their knowledge, understanding, skills and behaviours to the level of attainment required.

Access arrangements

Access arrangements are approved before an examination or assessment and allow students with special needs to access the assessment.

Access arrangements allow students to show what they know and do without changing the integrity or the demands of the assessment, for example by using a reader or scribe.

Special needs could include students:

- with known and long-standing learning difficulties
- with physical disabilities (permanent or temporary)
- with sensory impairment
- whose first language is not English
- who have difficulties at or near the time of assessment that may affect their performance in the assessment.

For more information about access arrangements, we suggest Providers refer to the JCQ booklet *Access Arrangements, Reasonable Adjustments*.

Special consideration

A student's assessment performance can sometimes be affected by circumstances out of their control. Special consideration is a post-examination adjustment that compensates students who were suffering from a temporary illness or condition, or who were otherwise disadvantaged at the time of the Technical Qualification assessment.

Exams officers may apply for special consideration on a student's behalf. We have a dedicated webpage for special consideration. This includes an FAQ fact sheet giving Providers answers to any questions or concerns they may have.

Special consideration will adhere to the following:

- There are general guidelines for special consideration in the JCQ booklet *A guide to the special consideration process*. It covers the process that is applied consistently by all awarding organisations. AOs will not enter into discussion with students or their parents as to how much special consideration should be applied.
- Special consideration cannot be applied in a cumulative fashion, i.e. because of a domestic crisis at the time of the exam and the student suffering from a viral illness.
- Private students should liaise with the Provider where entries have been made, so that they can apply for special consideration on the private student's behalf.

Malpractice

Dealing with malpractice in assessment

'Malpractice' refers to acts that undermine the integrity and validity of assessment, the certification of qualifications and/or may damage the authority of those responsible for delivering the assessment and certification.

Pearson does not tolerate actual or attempted malpractice by students, Provider staff or Providers in connection with Pearson qualifications. Pearson may impose sanctions on students, Provider staff or Providers where malpractice or attempted malpractice has been proven.

Malpractice may occur or be suspected in relation to any unit or type of assessment within a qualification. For further details on malpractice and advice on preventing malpractice by students, please see Pearson's *Centre Guidance: Dealing with Malpractice*, available on our website.

Providers are required to take steps to prevent malpractice and to assist with investigating instances of suspected malpractice. Students must be given information that explains what malpractice is and how suspected incidents will be dealt with by the Provider. The *Centre Guidance: Dealing with Malpractice* document gives full information on the actions we expect you to take.

Pearson may conduct investigations if we believe a Provider is failing to conduct assessments according to our policies. The above document gives further information, examples, and details the sanctions that may be imposed.

In the interests of students and Provider staff, Providers need to respond effectively and openly to all requests relating to an investigation into an incident of suspected malpractice.

Student malpractice

The Head of Provider is required to report incidents of suspected student malpractice that occur during the delivery of Pearson qualifications. We ask Providers to complete *JCQ Form M1* (www.jcq.org.uk/malpractice) and email it with any supporting documents (signed statements from the student, invigilator, copies of evidence, etc) to the Investigations Processing team at candidatemalpractice@pearson.com. The responsibility for determining any appropriate sanctions on students lies with Pearson.

Students must be informed at the earliest opportunity of the specific allegation and the Provider's malpractice policy, including the right of appeal. Students found guilty of malpractice may be disqualified from the qualification for which they have been entered with Pearson.

Failure to report malpractice constitutes staff or Provider malpractice.

Teacher/Provider malpractice

The Head of Provider is required to inform Pearson's Investigations team of any incident of suspected malpractice (which includes maladministration) by Provider staff, before any investigation is undertaken. The Head of Provider should inform the Investigations team by submitting a *JCQ M2 Form* (downloadable from www.jcq.org.uk/malpractice) with supporting documentation to pqsmalpractice@pearson.com. Where Pearson receives allegations of malpractice from other sources (for example Pearson staff, anonymous informants), the Investigations team will conduct the investigation directly or may ask the Head of Provider to assist.

Pearson reserves the right in cases of suspected malpractice to withhold the issuing of results while an investigation is in progress. Depending on the outcome of the investigation, results may not be released or they may be withheld.

Sanctions and appeals

Where malpractice is proven, we may impose sanctions such as:

- mark reduction for affected assessments
- disqualification from the qualification
- debarment from registration for Pearson qualifications for a period of time.

If we are concerned about a Provider's quality procedures we may impose sanctions such as:

- requiring Providers to create an improvement action plan
- requiring staff members to receive further training
- placing temporary suspensions on certification of students
- placing temporary suspensions on registration of students
- debarring staff members or the provider from delivering Pearson qualifications
- suspending or withdrawing Provider Approval Status.

The Provider will be notified if any of these apply.

Pearson has established procedures for considering appeals against sanctions arising from malpractice. Appeals against a decision made by Pearson will normally be accepted only from the Head of Provider (on behalf of students and/or members or staff) and from individual members (in respect of a decision taken against them personally). Further information on appeals can be found in the JCQ Appeals booklet (https://www.jcq.org.uk/exams-office/appeals)

Results transfer to Providers

To ensure you are supported, we will communicate with you on and before results day.

Results day follows the format below:

Assessment window	Results day
Summer 2025	August 2025 (Level 3 results day)
November 2025	March 2026

As we are not required to issue Technical Qualification certificates, T Level certificates or T Level statements of achievement, we do not require you to complete any forms or processes to claim the Technical Qualification from Pearson. Instead, we issue the results directly to you.

We will make available:

- Scorecards: outlining the achievement in percentage terms against each Assessment Objective
- Results Plus: a service whereby achievement will be presented in an item-by-item format. This means Providers will be able to ascertain trends across and within cohorts, and clearly label the associated Assessment Objective
- Statement of Provisional Results: we will offer a provisional component result slip, clearly watermarked as a provisional component result.

Post-Results Services

Our Technical Qualification post-results services (PRS) and appeals is implemented in line with Ofqual requirements, paying particular attention to the *Rules and Guidance for Technical Qualifications*, where sections Ofqual TQ13–23 refer to post-results activities, 'Review of Marking or Moderation' (RoMM) or Appeals.

Pearson provides the following:

- access to student assessment evidence
- appeal
- clerical checks
- expedited review of marking
- review of marking.

Our post-results services webpage includes all the necessary information for you to access the services for the T Level Technical Qualification. This information should be used alongside the JCQ Post-Results Service Guide.

PRS will be available after each assessment opportunity. Exams Officers will be able to apply for PRS via our online system; however, you must have permission from the student before applying. If a student wishes to apply for PRS they must do so via their Provider. We state within the PRS guidance on our website that we cannot accept appeals directly from students, their parents or other third parties acting on their behalf.

In addition, our unique Results Plus service and a free Access to Scripts service will be available, so that Providers are able to transparently see how marks are awarded.

Appeals process

Our appeals process for the Technical Qualification reflects industry standards, as outlined by the relevant Ofqual Condition(s) (TQ17–TQ22) relating to appeals.

You can appeal the outcome of marking, decisions made regarding reasonable adjustments or special consideration tariffs applied, and any consequence of malpractice or maladministration investigations by us or other Technical Qualification AOs.

All our investigations will be conducted in accordance with the JCQ *General and Vocational Qualifications Suspected Malpractice in Examinations and Assessments Policies and Procedures*.

7 Provider recognition and approval

Approval

Providers must be approved for each Technical Qualification they wish to deliver. You will find Pearson's approval forms, application guidance and support video on our Training and Admin Support webpage.

Provider and Technical Qualification approval

The resource requirements listed below must be in place before offering the qualification.

- Providers must have appropriate physical resources (for example, equipment, IT, learning materials, teaching rooms) to support the delivery and assessment of the qualification.
- There must be systems to ensure continuing professional development for staff delivering the qualification.
- Providers must have appropriate health and safety policies relating to the use of equipment by students.
- Providers must deliver the qualification in accordance with current equality and diversity legislation and/or regulations.
- Providers should refer to the resources for delivery of content section in the components to check for any specific resources required.
- Administration arrangements, including security of live assessments.

The methods we use to ensure Providers have the above resources in place include:

- making sure that all Providers complete appropriate declarations at the time
- of approval
- undertaking approval visits to Providers
- an overarching review and assessment of a Provider's strategy for delivering and quality assuring its technical qualifications.

Providers that do not comply with remedial action plans may have their approval to deliver qualifications removed.

What level of sector knowledge is needed to teach this qualification?

You will need to show that the necessary material resources and workspaces are available to deliver this technical qualification. Where specific resources are required to deliver the content, these are stated in the relevant component.

Providers should refer to the *resources for delivery* of content section in the components to check for any specific resources required

What resources are required to deliver this qualification?

You will need to show that the necessary material resources and workspaces are available to deliver this technical qualification. Where specific resources are required to deliver the content, these are stated in the relevant component.

Providers should refer to the *resources for delivery of content* section in the components to check for any specific resources required.

Quality assurance

All Providers will be subject to the same level of scrutiny for the delivery of the Technical Qualification.

To maintain ongoing quality, give support and monitor standards, you will receive a termly phone call, and support visit if necessary, from Pearson. We will check the quality of delivery, confirm implementation of guide/grade exemplification materials, and confirm you are on track for assessment and are accessing our Provider Support.

We will monitor the following activity that could impact approval status:

- registration patterns
- student outcomes
- quality issues
- reports of maladministration or malpractice.

We will identify any concerns during the termly phone call, provide support and escalate as required.

Live assessment monitoring

The Core Examinations and the Employer Set Project will be sat under exam conditions, following JCQ's ICE guidance.

The Occupational Specialist project has different controls depending on the tasks being undertaken by the student. Therefore, full detail of student monitoring will be provided within the assessment materials; these will be published on our T Level webpage before the assessment window commences.

8 Resources and support

We offer a range of support taking you from ‘on-boarding’ through to ‘Post Results Services’.

Content and Assessment

Specification

For each T Level we provide a specification and on-demand getting to know the specification training.

Specimen Assessment Materials

We provide two sets of SAM and mark scheme for each assessment within the T Level.

Exemplar Materials

We provide Guide Exemplification Materials for the Employer Set Project and Occupational Specialism; these give you an understanding of what a completed assessment and level of attainment will look like. We also provide Grade Exemplification Materials for each Occupational Specialism [following a live series], these show examples of live student work with examiner commentary.

Exam Wizard

Exclusive to Pearson, you have access to our exam-paper creation tool that allows you to create mock exams from a database of Core exam sample questions and exam papers. You specify the type of assessment you want and a bespoke test with mark scheme & examiner report is created for students to use as practice.

Past Papers

Following each exam series past papers and associated mark scheme are uploaded onto our T Level website for you to review and use with your students. Plus, all Core exam questions are loaded into Exam Wizard to increase the bank of items.

Examiner Report

Following each exam series we produce an Examiner Report for each assessment. These will show you how the assessment performed, where responses gained credit, and where responses could be improved.

Post Results Service

Our PRS service includes:

- Access to Scripts (allows you to request copies of marked assessments allowing you to check the correct marks have been awarded.)
- Review of Marking/Clerical Check (checks that our assessors have marked the assessment correctly, it includes a Clerical Check and a review of the original marks by a senior examiner and change if errors in the application of the mark scheme are found.)
- Priority Review of Marking (can be requested if a student gets a result they do not expect, and it puts their place at FE/HE at risk. This review takes priority over others and is completed, and the outcome communicated as quickly as possible.)

Results Plus

Exclusive to Pearson, you have access to our post-results data analysis tool. It gives item level analysis by student, class, cohort or clusters of Providers. This allows you to pinpoint areas of strength and weakness and to amend teaching and learning to improve student outcomes and motivation.

Course Materials

We have a range of course materials available to support the teaching and delivery of T Levels. We treat each T Level uniquely and work with Providers to create materials that best suits your needs.

Core component

The Core component is made up of several topic elements, these form the knowledge required for the qualification and skills associated with the knowledge.

Depending upon the T Level we provide materials such as:

- Scheme of work/curriculum planners.
- Teaching and learning guide.
- Topic delivery guide that includes: Topic lesson plan; introduction PowerPoint; industry resource links.
- Topic case studies – you can choose how to use these.
    - Deliver a whole case study, look in detail at how the case study covers the topics, enabling your students to learn about multiple topics and how they impact a single initiative.

Or

    - Deliver a whole topic using the examples from multiple case studies, looking in detail at the topic and how it differs depending upon the case study, enabling your students to focus on a single topic and explore how it changes and adapts depending upon the situation. Each case study starts with an introduction, designed to help introduce the concept of the case study and encourage
students to start to explore more about the project.

Occupational Specialism

We provide materials to support learning of Occupational Specialism content via the use of projects that can be used towards formative assessment.

In addition, we work closely with employers to support your Occupational Specialism delivery; for some T Levels we have industry partnerships that enable you to access a range of industry specific content, training, support and/or software.

Training and Professional Development

We have a dedicated webpage for everything related to training. From this page you can access our T Level training offer, watch our on-demand sessions, book onto live events, watch recorded webinar sessions or catch up on live sessions you might have missed.

Our live events include:

- **Q&A Network Session**s with the Product Manager and Subject Advisor giving you the opportunity to ask questions, discuss your experience delivering the
  T Level and share good practice with other Providers.
- **Getting Ready to Teach** where you'll cover planning your programme, reviewing elements of the content and practical ways it can be delivered, and signposting to the ongoing support available.
- **Getting Ready to Assess** where you'll learn how the assessment will work. Our aim is for you to have a good understanding of the approach we have taken in the assessments. We will look at the 'command verb' and discuss what is meant and the type of response required, and how the response changes depending upon the mark attributed to the question. We will also refer to the mark scheme for you to understand where marks will and will not be attributed.

Administration and Exam Officer Support

We have a dedicated webpage for everything related to administration. On this page you'll find everything you need to administer your T Level. This page supports tutors, exams officers, administrators, anyone applying for Provider Approval, and all those involved in the delivery and management of assessment sessions.

Students

We have a dedicated webpage for students (which is also really handy for parents too) and is ideal to signpost to or use during your recruitment activities. Here you will find:

- **Qualification description** – each T Level has one of these. It describes the outline of the T Level, the knowledge and skills that will be gained, and the progression routes available (realistic entry job roles, apprenticeships, higher technical qualifications, and degree programme).
- **Student journey** – describing what a typical 2-year programme could look like.
- **Qualification brochure and poster** – ideal for supporting recruitment fairs or social media activity.
- **Student case studies** – enabling those interested in T Levels to hear from current T Level students, why they chose a T Level, what they've learnt and what they want to do next.

Provider contact

Our T Levels Support webpage gives you all the contact details to support you. This includes our:

- Pearson support portal
- call centre, which is open between 8am and 5pm
- postal address.

Appendix 1: General Competency Frameworks for T Levels

The General Competency Framework for T Levels articulates English, maths and digital competencies that students are required to develop over the course of the qualification. The tables below list the competencies from the framework that are relevant to the *T Level Technical Qualification in Craft and Design*. The skills in grey are not relevant.

Competencies that can be developed in relation to a specification element of content are referenced in the column next to this content element in the occupational specialism. These competencies should be delivered through the content of this qualification and tutors should seek opportunities to allow students to develop the relevant skills to enable them to reach threshold competence in the specialism.

The English, maths and digital competencies are embedded in both the Core Component and the Occupational Specialist Component of the *T Level Technical Qualification in Craft and Design*. This is so that students can demonstrate their knowledge and understanding of these skills over the course of the qualification.

General English competencies

E1	Convey technical information to different audiences
E2	Present information and ideas
E3	Create texts for different purposes and audiences
E4	Summarise information/ideas
E5	Synthesise information
E6	Take part in/leading discussions

General maths competencies

M1	Measure with precision
M2	Estimate, calculate and spot errors
M3	Work with proportion
M4	Use rules and formulae
M5	Process data
M6	Understand data and risk
M7	Interpret and represent with mathematical diagrams
M8	Communicate using mathematics

M9	Cost a project
M10	Optimise work processes

General digital competencies

Students should be supported to develop the digital knowledge and skills needed in order to:

D1	Use digital technology and media effectively
D2	Design, create and edit documents and digital media
D3	Communicate and collaborate
D4	Process and analyse numerical data
D5	Be safe and responsible online

Command word taxonomy list

The following table shows the command words that will be used consistently in our assessments to ensure students are rewarded for demonstrating the necessary skills. The list below will not necessarily be used in every paper and is provided for guidance only.

Command word	Definition	Mark tariffs
Which (MCQ)	MCQ instructions	1 mark per item
State/Give/ Name	All these command words are synonyms. They generally all require recall of one or more pieces of information.	1 mark per item
Explain	Requires identification of a point and linked justification of that point. The answer must contain some linked reasoning.	2 or 4 marks. Max 2 marks per response. 2 mark – point (1) + justification (1) 4 mark – point (1) + justification (1) used twice
Discuss	Consider the factors that apply in relation to a specific context. Give careful consideration to the aspects of an issue, situation, or a problem. Does not require a conclusion.	6 mark EOR. LBMS descriptors provided – must use these
Assess	Consider the factors that apply in relation to a specific context. Give careful consideration to which are the most significant, important or relevant, leading to a reasoned judgement/conclusion.	12 mark EOR LBMS descriptors provided must use these
Evaluate	Consider the factors that apply in relation to a specific context. Give careful consideration to characteristics such as strengths and weaknesses, advantages and disadvantages, pros and cons, leading to a reasoned judgement/conclusion.	12 mark EOR LBMS descriptors provided – must use these

Explore Pearson's T Levels offering at
https://qualifications.pearson.com/en/qualifications/t-levels.html