

Inspire, Challenge, Enrich

SUBJECT/YEAR - Curriculum maps

Department mission/curriculum statement: Design & Technology - Engineering

Year 7	Project 1	Project 2	Project 3
Topic and/or Key Question	PD7 CAD Light Switch Surround	PD7 Phone Holder	PD7 CAD Clock Project
Key Knowledge/Skills Main skills (subject specific and generic) that will be developed and how	Introduction to the workshop: Health and Safety Materials: Wood classification. Where does timber come from? Design: Designing for users Rendering CAD design development Make: Wood joints Use of hand tools and machines Evaluate: What makes a good surround? How can you improve your skills?	Materials: Polymers Classification. What is a polymer? What is a circuit? Design: Designing with restrictions Orthographic Projection & Rendering Make: Thermal - Forming Shaping Polymer Evaluate: Does your product work? How can you fix problems?	Materials: Working with acrylics, cutting and finishing techniques Design: CAD What is computer aided design? Learn to use the basics of 2D software to design products Make: What is CAM? Use the laser cutter to produce your final product! Evaluate: How has CAD / CAM helped you make a product?
Key Vocabulary (School Improvement Priority)	aesthetic analyse analysis anthropometrics assurance brief client colour construction consumer continuous control criteria customer decision design develop development dimensions ergonomics evaluate evaluation function graphic idea industrial	aesthetic analyse analysis anthropometrics assurance brief client colour construction consumer continuous control criteria customer decision design develop development dimensions ergonomics evaluate evaluation function graphic idea industrial	aesthetic analyse analysis anthropometrics assurance brief client colour construction consumer continuous control criteria customer decision design develop development dimensions ergonomics evaluate evaluation function graphic idea industrial

	innovation isometric make / making manufacture manufacturing material millimetre modification modify organise orthographic process product production prototype quality research safety situation solution specification suitable technology testing	innovation isometric make / making manufacture manufacturing material millimetre modification modify organise orthographic process product production prototype quality research safety situation solution specification suitable technology testing	innovation isometric make / making manufacture manufacturing material millimetre modification modify organise orthographic process product production prototype quality research safety situation solution specification suitable technology testing
Extended Writing Extended writing opportunities and skill development (School Improvement Priority)	Product Analysis Peer review Self-review Evaluation -Teacher assessed and green pen improvements to be completed after being assessed. (Feedback and assessment criteria within the booklet, at the top of the assessed work.)	Product Analysis Peer review Self-review Evaluation -Teacher assessed and green pen improvements to be completed after being assessed. (Feedback and assessment criteria within the booklet, at the top of the assessed work.)	Product Analysis Peer review Self-review Evaluation -Teacher assessed and green pen improvements to be completed after being assessed. (Feedback and assessment criteria within the booklet, at the top of the assessed work.)
Assessment [Summative & Formative] How knowledge and skills will be assessed formally and informally. How feedback will be given	Assessment grids included at the top of all extended writing tasks and any further assessed pieces. - Teachers will highlight the areas which have been met but circle and mark with a T for the criteria needed to be targeted within their green pen improvements. - Assessment criteria also summarised at the back of the booklet to highlight the grading in which they fall within before and after green pen improvements.	Assessment grids included at the top of all extended writing tasks and any further assessed pieces. - Teachers will highlight the areas which have been met but circle and mark with a T for the criteria needed to be targeted within their green pen improvements. - Assessment criteria also summarised at the back of the booklet to highlight the grading in which they fall within before and after green pen improvements.	Assessment grids included at the top of all extended writing tasks and any further assessed pieces. - Teachers will highlight the areas which have been met but circle and mark with a T for the criteria needed to be targeted within their green pen improvements. - Assessment criteria also summarised at the back of the booklet to highlight the grading in which they fall within before and after green pen improvements.

Inspire, Challenge, Enrich

	Assessment criteria at the back of the booklet will also be used to mark practical assessments so students can visibly see their grading and how to improve. Informal feedback given throughout theory and practical lessons. Minimum of Two of the sections will be formally assessed every 3 weeks, as per the faculty marking policy. WWW/EBI Verbal feedback Extended Writing Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment Self-Assessment/ Self End of topic Assessment Student reflections- DIRT <u>Examples:</u> Research pieces- questionnaires/existing products Design sketches with annotation Making of the product and end result/outcome Evaluation of the making process.	Assessment criteria at the back of the booklet will also be used to mark practical assessments so students can visibly see their grading and how to improve. Informal feedback given throughout theory and practical lessons. Minimum of Two of the sections will be formally assessed every 3 weeks, as per the faculty marking policy. WWW/EBI Verbal feedback Extended Writing Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment Self-Assessment/ Self End of topic Assessment Student reflections- DIRT <u>Examples:</u> Research pieces- questionnaires/existing products Design sketches with annotation Making of the product and end result/outcome Evaluation of the making process.	Assessment criteria at the back of the booklet will also be used to mark practical assessments so students can visibly see their grading and how to improve. Informal feedback given throughout theory and practical lessons. Minimum of Two of the sections will be formally assessed every 3 weeks, as per the faculty marking policy. WWW/EBI Verbal feedback Extended Writing Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment Self-Assessment/ Self End of topic Assessment Student reflections- DIRT <u>Examples:</u> Research pieces- questionnaires/existing products Design sketches with annotation Making of the product and end result/outcome Evaluation of the making process.
--	---	---	---

Inspire, Challenge, Enrich

Year 8	Project 1	Project 2
Topic and/or Key Question	PD8 Drawing Set/ CAD/CAM	PD8 Night Light Project/ CAD/CAM
Key Knowledge/Skills Main skills (subject specific and generic) that will be developed and how	Materials: Working with Polymer (acrylic) Design: Designing for a user and client. What is an isometric projection? Develop design ideas using CAD. Make: Develop independence in CAD using 2D design software to make complex design ideas. Evaluate: At each stage of making, how can you improve your product? Would you change anything?	Materials: Timbers - hard woods and softwoods, why do we use them? Working with acrylics and circuitry to develop a working night light. 2D Design: Design: Isometric projection, CAD development Testing / Modelling: Will my product work? What can I do to improve it? Make: Can you make an accurate product using machines and tools independently? Evaluate: What skills have you developed? Test your product and consider how you would improve it.
Key Vocabulary (School Improvement Priority)	aesthetic analyse analysis anthropometrics assurance brief client colour construction consumer continuous control criteria customer decision design develop development dimensions ergonomics evaluate evaluation function graphic idea industrial innovation isometric	aesthetic analyse analysis anthropometrics assurance brief client colour construction consumer continuous control criteria customer decision design develop development dimensions ergonomics evaluate evaluation function graphic idea industrial innovation isometric

Inspire, Challenge, Enrich

	make / making manufacture manufacturing material millimetre modification modify organise orthographic process product production prototype quality research safety situation solution specification suitable technology testing	make / making manufacture manufacturing material millimetre modification modify organise orthographic process product production prototype quality research safety situation solution specification suitable technology testing
Extended Writing Extended writing opportunities and skill development (School Improvement Priority)	Product Analysis Peer review Self-review Evaluation -Teacher assessed and green pen improvements to be completed after being assessed. (Feedback and assessment criteria within the booklet, at the top of the assessed work.)	Product Analysis Peer review Self-review Evaluation -Teacher assessed and green pen improvements to be completed after being assessed. (Feedback and assessment criteria within the booklet, at the top of the assessed work.)
Assessment [Summative & Formative] How knowledge and skills will be assessed formally and informally. How feedback will be given	Assessment grids included at the top of all extended writing tasks and any further assessed pieces. - Teachers will highlight the areas which have been met but circle and mark with a T for the criteria needed to be targeted within their green pen improvements. - Assessment criteria also summarised at the back of the booklet to highlight the grading in which they fall within before and after green pen improvements. - Assessment criteria at the back of the booklet will also be used to mark practical assessments so students can visibly see their grading and how to improve.	Assessment grids included at the top of all extended writing tasks and any further assessed pieces. - Teachers will highlight the areas which have been met but circle and mark with a T for the criteria needed to be targeted within their green pen improvements. - Assessment criteria also summarised at the back of the booklet to highlight the grading in which they fall within before and after green pen improvements. - Assessment criteria at the back of the booklet will also be used to mark practical assessments so students can visibly see their grading and how to improve.

Inspire, Challenge, Enrich

	Informal feedback given throughout theory and practical lessons. Minimum of Two of the sections will be formally assessed every 3 weeks, as per the faculty marking policy. WWW/EBI Verbal feedback Extended Writing Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment Self-Assessment/ Self End of topic Assessment Student reflections- DIRT <u>Examples:</u> Research pieces- questionnaires/existing products Design sketches with annotation Making of the product and end result/outcome Evaluation of the making process.	Informal feedback given throughout theory and practical lessons. Minimum of Two of the sections will be formally assessed every 3 weeks, as per the faculty marking policy. WWW/EBI Verbal feedback Extended Writing Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment Self-Assessment/ Self End of topic Assessment Student reflections- DIRT <u>Examples:</u> Research pieces- questionnaires/existing products Design sketches with annotation Making of the product and end result/outcome Evaluation of the making process.
--	---	---

Inspire, Challenge, Enrich

Year 9	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
Topic and/or Key Question	Practical Skills R105 DESIGN BRIEFS, DESIGN SPECIFICATIONS AND USER REQUIREMENTS LO1	Practical Skills R105 DESIGN BRIEFS, DESIGN SPECIFICATIONS AND USER REQUIREMENTS LO1	R106 PRODUCT ANALYSIS AND RESEARCH LO1	R106 PRODUCT ANALYSIS AND RESEARCH LO2	R106 PRODUCT ANALYSIS AND RESEARCH LO3/4	Practical Skills R105 DESIGN BRIEFS, DESIGN SPECIFICATIONS AND USER REQUIREMENTS LO2
Key Knowledge/Skills Main knowledge/skills (subject specific and generic) that will be developed and how	LO1 - Understanding the design cycle and the relationship between design briefs and design specifications. The Design Cycle The Design Phase Optimise Phase Validate stage Identification of design needs Initial design brief The relationship between client and designer Design Specification User needs Product requirements Manufacturing requirements Manufacturing considerations Production costs Regulations & Safeguards Wider influences on new products Market pull / technological push Cultural and fashion trends legislative design requirements Links to inspirational / iconic products Life Cycle Analysis (LCA) Sustainable design New and emerging technologies and materials Environmental pressures	LO1 - Know how commercial production methods, quality and legislation impact on the design of products and components. The Design Cycle The Design Phase Optimise Phase Validate stage Identification of design needs Initial design brief The relationship between client and designer Design Specification User needs Product requirements Manufacturing requirements Manufacturing considerations Production costs Regulations & Safeguards Wider influences on new products Market pull / technological push Cultural and fashion trends legislative design requirements Links to inspirational / iconic products Life Cycle Analysis (LCA) Sustainable design New and emerging technologies and materials Environmental pressures	LO2 - Be able to research existing products. Commercial production methods that impact on product /component design Impact of manufacturing processes on product design, Considerations for product end of life. Importance of conformity to legislation, quality and safety standards. Research methods used to inform product analysis. Strengths and weaknesses of existing products (e.g. finish, aesthetics, suitability to meet user needs, materials used, durability, sustainability, life cycle, energy use, power sources). Methods used to summarise research outcomes. The use of sources and procedures for disassembly. Disassembly procedures using appropriate tools and instruments safely. Analyse an existing product through disassembly,	LO2 - Be able to research existing products. LO3 - Be able to analyse an existing product through disassembly. Commercial production methods that impact on product /component design Impact of manufacturing processes on product design, Considerations for product end of life. Importance of conformity to legislation, quality and safety standards. Research methods used to inform product analysis. Strengths and weaknesses of existing products (e.g. finish, aesthetics, suitability to meet user needs, materials used, durability, sustainability, life cycle, energy use, power sources). Methods used to summarise research outcomes. The use of sources and procedures for disassembly. Disassembly procedures using appropriate tools and instruments safely. Analyse an existing product through disassembly,	LO2 - Understanding the requirements of design specifications for the development of a new project. Commercial production methods that impact on product /component design Impact of manufacturing processes on product design, Considerations for product end of life. Importance of conformity to legislation, quality and safety standards. Research methods used to inform product analysis. Strengths and weaknesses of existing products (e.g. finish, aesthetics, suitability to meet user needs, materials used, durability, sustainability, life cycle, energy use, power sources). Methods used to summarise research outcomes. The use of sources and procedures for disassembly. Disassembly procedures using appropriate tools and instruments safely. Analyse an existing product through disassembly,	LO2 - Understanding the design cycle and the relationship between design briefs and design specifications. The Design Cycle The Design Phase Optimise Phase Validate stage Identification of design needs Initial design brief The relationship between client and designer Design Specification User needs Product requirements Manufacturing requirements Manufacturing considerations Production costs Regulations & Safeguards Wider influences on new products Market pull / technological push Cultural and fashion trends legislative design requirements Links to inspirational / iconic products Life Cycle Analysis (LCA) Sustainable design New and emerging technologies and materials Environmental pressures
Key Vocabulary (School Improvement Priority)	Accurately Appropriate Clear Communicate Complex Confident Critical Design Detail Effective Evaluate Independent List Outline Plan Range	Design specifications The Design Cycle Identify Design Phase Optimise Validation Design Brief Product requirements Manufacturing considerations: Materials Supply Ease Scale Safety Sustainability Production Costs	Commercial Production methods Manufacturing processes Design End of life Considerations Conformity Research product analysis Analysing Existing Summarising Presenting Outcomes Disassembly Procedures	Commercial Production methods Manufacturing processes Design End of life Considerations Conformity Research product analysis Analysing Existing Summarising Presenting Outcomes Disassembly Procedures	Commercial Production methods Manufacturing processes Design End of life Considerations Conformity Research product analysis Analysing Existing Summarising Presenting Outcomes Disassembly Procedures	Design specifications The Design Cycle Identify Design Phase Optimise Validation Design Brief Product requirements Manufacturing considerations: Materials Supply Ease Scale Safety Sustainability Production Costs

Inspire, Challenge, Enrich

	Support Tolerance	Regulations Safeguards Market Forces Inspirational Analysis Legislation Environment Pressures Reliability	Safe Products	Safe Products	Safe Products	Regulations Safeguards Market Forces Inspirational Analysis Legislation Environment Pressures Reliability
Extended Writing Extended writing opportunities and skill development (School Improvement Priority)	Extended Exam Questions Analysis Research Evaluation Learners will understand the overall design process through study of the design cycle, existing product and life cycle analysis, study of new and improved materials and manufacturing processes, and how these and other factors influence a design solution.	Extended Exam Questions Analysis Research Evaluation Learners will understand the overall design process through study of the design cycle, existing product and life cycle analysis, study of new and improved materials and manufacturing processes, and how these and other factors influence a design solution.	Written Reports Analysis Research Evaluation This unit will enable learners to perform effective product analysis. They will research existing solutions and assess the development of engineered products. Learners will develop dextrous skills and gain practical experience of product assembly and disassembly to appreciate manufacturing processes, design features and materials used. This unit develops learner's creativity and critical analysis through an understanding of the principles behind good design. They will consider what makes a good product sell by analysing existing solutions.	Written Reports Analysis Research Evaluation This unit will enable learners to perform effective product analysis. They will research existing solutions and assess the development of engineered products. Learners will develop dextrous skills and gain practical experience of product assembly and disassembly to appreciate manufacturing processes, design features and materials used. This unit develops learner's creativity and critical analysis through an understanding of the principles behind good design. They will consider what makes a good product sell by analysing existing solutions.	Written Reports Analysis Research Evaluation This unit will enable learners to perform effective product analysis. They will research existing solutions and assess the development of engineered products. Learners will develop dextrous skills and gain practical experience of product assembly and disassembly to appreciate manufacturing processes, design features and materials used. This unit develops learner's creativity and critical analysis through an understanding of the principles behind good design. They will consider what makes a good product sell by analysing existing solutions.	Extended Exam Questions Analysis Research Evaluation Learners will understand the overall design process through study of the design cycle, existing product and life cycle analysis, study of new and improved materials and manufacturing processes, and how these and other factors influence a design solution.
Assessment [Summative & Formative] How knowledge and skills will be assessed formally and informally. How feedback will be given	R105 - LO: 1, 2, and 3 are assessed through an externally set written examination paper, worth a maximum of 60 marks and 1 hour in duration. Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts.	R105 - LO: 1, 2, and 3 are assessed through an externally set written examination paper, worth a maximum of 60 marks and 1 hour in duration. Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts.	Summative: Centre-assessed tasks OCR-moderated – 60 marks Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI	Summative: Centre-assessed tasks OCR-moderated – 60 marks Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI	Summative: Centre-assessed tasks OCR-moderated – 60 marks Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI	R105 - LO: 1, 2, and 3 are assessed through an externally set written examination paper, worth a maximum of 60 marks and 1 hour in duration. Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts.

Inspire, Challenge, Enrich

	Exam Criteria Assessment WWW/EBI Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO’s Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Exam Criteria Assessment WWW/EBI Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO’s Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO’s Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO’s Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO’s Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Exam Criteria Assessment WWW/EBI Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO’s Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT
--	--	--	---	---	---	--

Year 10	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
Topic and/or Key Question	Practical Skills R105 DESIGN BRIEFS, DESIGN SPECIFICATIONS AND USER REQUIREMENTS LO2	R107 DEVELOPING AND PRESENTING ENGINEERING DESIGNS LO1	R107 DEVELOPING AND PRESENTING ENGINEERING DESIGNS LO2	R107 DEVELOPING AND PRESENTING ENGINEERING DESIGNS LO3	Practical Skills R105 DESIGN BRIEFS, DESIGN SPECIFICATIONS AND USER REQUIREMENTS LO3	Practical Skills R105 DESIGN BRIEFS, DESIGN SPECIFICATIONS AND USER REQUIREMENTS LO3
Key Knowledge/Skills Main skills (subject specific and generic) that will be developed and how	LO2 - Understanding the requirements of design specifications for the development of a new project. The Design Cycle The Design Phase Optimise Phase Validate stage Identification of design needs Initial design brief The relationship between client and designer Design Specification User needs Product requirements Manufacturing requirements Manufacturing considerations Production costs Regulations & Safeguards Wider influences on new products Market pull / technological push Cultural and fashion trends legislative design requirements Links to inspirational / iconic products Life Cycle Analysis (LCA) Sustainable design New and emerging technologies and materials Environmental pressures	LO1 - Be able to generate design proposals using a range of techniques Hand-drawing techniques to design and present ideas and concepts. Rendering using shade, tone and texture. Annotation and labelling techniques that demonstrate design ideas. The use of ICT software to produce, modify and enrich design proposals. Techniques to produce technical drawings. 3D engineering drawings 2D engineering drawings. CAD applications to produce and communicate design proposals. Techniques used to communicate design proposals.	LO2 - Know how to develop designs using engineering drawing techniques and annotation Hand-drawing techniques to design and present ideas and concepts. Rendering using shade, tone and texture. Annotation and labelling techniques that demonstrate design ideas. The use of ICT software to produce, modify and enrich design proposals. Techniques to produce technical drawings. 3D engineering drawings 2D engineering drawings. CAD applications to produce and communicate design proposals. Techniques used to communicate design proposals.	LO3 - Be able to use Computer Aided Design (CAD) software and techniques to produce and communicate design proposals Hand-drawing techniques to design and present ideas and concepts. Rendering using shade, tone and texture. Annotation and labelling techniques that demonstrate design ideas. The use of ICT software to produce, modify and enrich design proposals. Techniques to produce technical drawings. 3D engineering drawings 2D engineering drawings. CAD applications to produce and communicate design proposals. Techniques used to communicate design proposals.	LO3 - Know how the wider influences on the design of new products. The Design Cycle The Design Phase Optimise Phase Validate stage Identification of design needs Initial design brief The relationship between client and designer Design Specification User needs Product requirements Manufacturing requirements Manufacturing considerations Production costs Regulations & Safeguards Wider influences on new products Market pull / technological push Cultural and fashion trends legislative design requirements Links to inspirational / iconic products Life Cycle Analysis (LCA) Sustainable design New and emerging technologies and materials Environmental pressures	LO2 - Understanding the requirements of design specifications for the development of a new project. The Design Cycle The Design Phase Optimise Phase Validate stage Identification of design needs Initial design brief The relationship between client and designer Design Specification User needs Product requirements Manufacturing requirements Manufacturing considerations Production costs Regulations & Safeguards Wider influences on new products Market pull / technological push Cultural and fashion trends legislative design requirements Links to inspirational / iconic products Life Cycle Analysis (LCA) Sustainable design New and emerging technologies and materials Environmental pressures
Key Vocabulary (School Improvement Priority)	Accuracy Analysis Communicate Control Criteria Design Error Function Evaluate Impact Model Performance Plan Prototype Requirements Scale	Freehand Hand Drawn Sketching Rendering Annotation Labelling ICT Software 2D 3D Engineering Drawings CAD Communicating Proposals Hand Drawn	Freehand Hand Drawn Sketching Rendering Annotation Labelling ICT Software 2D 3D Engineering Drawings CAD Communicating Proposals Hand Drawn	Freehand Hand Drawn Sketching Rendering Annotation Labelling ICT Software 2D 3D Engineering Drawings CAD Communicating Proposals Hand Drawn	Accuracy Analysis Communicate Control Criteria Design Error Function Evaluate Impact Model Performance Plan Prototype Requirements Scale	Design specifications The Design Cycle Identify Design Phase Optimise Validation Design Brief Product requirements Manufacturing considerations: Materials Supply Ease Scale Safety Sustainability Production Costs

Inspire, Challenge, Enrich

	Test Specification Trueness				Test Specification Trueness	Regulations Safeguards Market Forces Inspirational Analysis Legislation Environment Pressures Reliability
Extended Writing Extended writing opportunities and skill development (School Improvement Priority)	Extended Exam Questions Analysis Research Evaluation Learners will understand the overall design process through study of the design cycle, existing product and life cycle analysis, study of new and improved materials and manufacturing processes, and how these and other factors influence a design solution.	Written Reports Analysis Research Evaluation Learners will gain skills in annotation and labelling techniques, such as showing key features, functions, dimensions, materials, construction/manufacture methods.	Written Reports Analysis Research Evaluation Learners will gain skills in annotation and labelling techniques, such as showing key features, functions, dimensions, materials, construction/manufacture methods.	Written Reports Analysis Research Evaluation Learners will gain skills in annotation and labelling techniques, such as showing key features, functions, dimensions, materials, construction/manufacture methods.	Extended Exam Questions Analysis Research Evaluation Learners will understand the overall design process through study of the design cycle, existing product and life cycle analysis, study of new and improved materials and manufacturing processes, and how these and other factors influence a design solution.	Extended Exam Questions Analysis Research Evaluation Learners will understand the overall design process through study of the design cycle, existing product and life cycle analysis, study of new and improved materials and manufacturing processes, and how these and other factors influence a design solution.
Assessment [Summative & Formative] How knowledge and skills will be assessed formally and informally. How feedback will be given	R105 - LO: 1, 2, and 3 are assessed through an externally set written examination paper, worth a maximum of 60 marks and 1 hour in duration. Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO's Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Summative: Centre-assessed tasks OCR-moderated – 60 marks Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO's Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Summative: Centre-assessed tasks OCR-moderated – 60 marks Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO's Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Summative: Centre-assessed tasks OCR-moderated – 60 marks Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO's Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	R105 - LO: 1, 2, and 3 are assessed through an externally set written examination paper, worth a maximum of 60 marks and 1 hour in duration. Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO's Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	R105 - LO: 1, 2, and 3 are assessed through an externally set written examination paper, worth a maximum of 60 marks and 1 hour in duration. Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO's Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT

Inspire, Challenge, Enrich

Year 11	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
Topic and/or Key Question	R108 3D DESIGN REALISATION LO1, LO2	R108 3D DESIGN REALISATION LO3	R108 3D DESIGN REALISATION LO4	R105 DESIGN BRIEFS, DESIGN SPECIFICATIONS AND USER REQUIREMENTS LO1,LO2,LO3	R105 DESIGN BRIEFS, DESIGN SPECIFICATIONS AND USER REQUIREMENTS LO1,LO2,LO3	R105 DESIGN BRIEFS, DESIGN SPECIFICATIONS AND USER REQUIREMENTS LO1,LO2,LO3
Key Knowledge/Skills Main skills (subject specific and generic) that will be developed and how	LO1 - Know how to plan the making of a prototype LO2 - Understand safe working practices used when making a prototype Key considerations when making a prototype, Interpretation of a product specification. Processes for making a prototype model Use of planning tools Resources when making a prototype Planning stages used in the making a prototype Identification and consideration of risks in production plans Production and use of risk assessments for production activities How to assess hazards and take precautions when using tools and machines Safe use of hand tools and machines Use of personal protective equipment (PPE) during production processes Safe working procedures when using materials, chemicals, finishes and solvents Selection and use of appropriate materials to produce a prototype Use of tools and processes to cut and shape materials Use of preparation and assembly methods Methods of recording key stages of making the prototype how to evaluate a prototype Potential improvements in design How to evaluate own performance, Management of time and resources Planning and preparation Precision and accuracy achieved in making processes Quality of outcome	LO3 - Be able to produce a prototype Key considerations when making a prototype, Interpretation of a product specification. Processes for making a prototype model Use of planning tools Resources when making a prototype Planning stages used in the making a prototype Identification and consideration of risks in production plans Production and use of risk assessments for production activities How to assess hazards and take precautions when using tools and machines Safe use of hand tools and machines Use of personal protective equipment (PPE) during production processes Safe working procedures when using materials, chemicals, finishes and solvents Selection and use of appropriate materials to produce a prototype Use of tools and processes to cut and shape materials Use of preparation and assembly methods Methods of recording key stages of making the prototype how to evaluate a prototype Potential improvements in design How to evaluate own performance, Management of time and resources Planning and preparation Precision and accuracy achieved in making processes Quality of outcome	LO4 - Be able to evaluate the success of a prototype Key considerations when making a prototype, Interpretation of a product specification. Processes for making a prototype model Use of planning tools Resources when making a prototype Planning stages used in the making a prototype Identification and consideration of risks in production plans Production and use of risk assessments for production activities How to assess hazards and take precautions when using tools and machines Safe use of hand tools and machines Use of personal protective equipment (PPE) during production processes Safe working procedures when using materials, chemicals, finishes and solvents Selection and use of appropriate materials to produce a prototype Use of tools and processes to cut and shape materials Use of preparation and assembly methods Methods of recording key stages of making the prototype how to evaluate a prototype Potential improvements in design How to evaluate own performance, Management of time and resources Planning and preparation Precision and accuracy achieved in making processes Quality of outcome	LO1 - Understanding the design cycle and the relationship between design briefs and design specifications. LO2 - Understanding the requirements of design specifications for the development of a new project LO3 - Know how the wider influences on the design of new products The Design Cycle The Design Phase Optimise Phase Validate stage Identification of design needs Initial design brief The relationship between client and designer Design Specification User needs Product requirements Manufacturing requirements Manufacturing considerations Production costs Regulations & Safeguards Wider influences on new products Market pull / technological push Cultural and fashion trends legislative design requirements Links to inspirational / iconic products Life Cycle Analysis (LCA) Sustainable design New and emerging technologies and materials Environmental pressures	LO1 - Understanding the design cycle and the relationship between design briefs and design specifications. LO2 - Understanding the requirements of design specifications for the development of a new project LO3 - Know how the wider influences on the design of new products The Design Cycle The Design Phase Optimise Phase Validate stage Identification of design needs Initial design brief The relationship between client and designer Design Specification User needs Product requirements Manufacturing requirements Manufacturing considerations Production costs Regulations & Safeguards Wider influences on new products Market pull / technological push Cultural and fashion trends legislative design requirements Links to inspirational / iconic products Life Cycle Analysis (LCA) Sustainable design New and emerging technologies and materials Environmental pressures	LO1 - Understanding the design cycle and the relationship between design briefs and design specifications. LO2 - Understanding the requirements of design specifications for the development of a new project LO3 - Know how the wider influences on the design of new products The Design Cycle The Design Phase Optimise Phase Validate stage Identification of design needs Initial design brief The relationship between client and designer Design Specification User needs Product requirements Manufacturing requirements Manufacturing considerations Production costs Regulations & Safeguards Wider influences on new products Market pull / technological push Cultural and fashion trends legislative design requirements Links to inspirational / iconic products Life Cycle Analysis (LCA) Sustainable design New and emerging technologies and materials Environmental pressures
Key Vocabulary (School Improvement Priority)	Interpreting Specifications Materials Processes Planning Resources Risks Hazards Risk Assessments	Interpreting Specifications Materials Processes Planning Resources Risks Hazards Risk Assessments	Interpreting Specifications Materials Processes Planning Resources Risks Hazards Risk Assessments	Design specifications The Design Cycle Identify Design Phase Optimise Validation Design Brief Product requirements Manufacturing considerations:	Design specifications The Design Cycle Identify Design Phase Optimise Validation Design Brief Product requirements Manufacturing considerations:	Design specifications The Design Cycle Identify Design Phase Optimise Validation Design Brief Product requirements Manufacturing considerations:

Inspire, Challenge, Enrich

	Safely PPE Hand Tools Machines Recording Prototype Making Selecting Preparation Assembly Comparing Plan Evaluating Improvements Personal Performance	Safely PPE Hand Tools Machines Recording Prototype Making Selecting Preparation Assembly Comparing Plan Evaluating Improvements Personal Performance	Safely PPE Hand Tools Machines Recording Prototype Making Selecting Preparation Assembly Comparing Plan Evaluating Improvements Personal Performance	Materials Supply Ease Scale Safety Sustainability Production Costs Regulations Safeguards Market Forces Inspirational Analysis Legislation Environment Pressures Reliability	Materials Supply Ease Scale Safety Sustainability Production Costs Regulations Safeguards Market Forces Inspirational Analysis Legislation Environment Pressures Reliability	Materials Supply Ease Scale Safety Sustainability Production Costs Regulations Safeguards Market Forces Inspirational Analysis Legislation Environment Pressures Reliability
Extended Writing Extended writing opportunities and skill development (School Improvement Priority)	Written Reports Analysis Research Evaluation Learners will evaluate the prototype making a comparison of the outcome against the product specification and evaluate potential improvements in design such as features, function, materials, aesthetics and ergonomics and make suggestions on improvements to the final product.	Written Reports Analysis Research Evaluation Learners will evaluate the prototype making a comparison of the outcome against the product specification and evaluate potential improvements in design such as features, function, materials, aesthetics and ergonomics and make suggestions on improvements to the final product.	Written Reports Analysis Research Evaluation Learners will evaluate the prototype making a comparison of the outcome against the product specification and evaluate potential improvements in design such as features, function, materials, aesthetics and ergonomics and make suggestions on improvements to the final product.	Extended Exam Questions Analysis Research Evaluation Learners will understand the overall design process through study of the design cycle, existing product and life cycle analysis, study of new and improved materials and manufacturing processes, and how these and other factors influence a design solution.	Extended Exam Questions Analysis Research Evaluation Learners will understand the overall design process through study of the design cycle, existing product and life cycle analysis, study of new and improved materials and manufacturing processes, and how these and other factors influence a design solution.	
Assessment [Summative & Formative] How knowledge and skills will be assessed formally and informally. How feedback will be given	Summative: Centre-assessed tasks OCR-moderated – 60 marks Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI	Summative: Centre-assessed tasks OCR-moderated – 60 marks Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI	Summative: Centre-assessed tasks OCR-moderated – 60 marks Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts. Exam Criteria Assessment WWW/EBI	R105 - LO: 1, 2, and 3 are assessed through an externally set written examination paper, worth a maximum of 60 marks and 1 hour in duration. Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts.	R105 - LO: 1, 2, and 3 are assessed through an externally set written examination paper, worth a maximum of 60 marks and 1 hour in duration. Learners should study the design requirements, influences and user needs within the taught content in the context of a range of real engineered products. Exam papers for this unit will use engineered products as the focus for some questions, however, it is not a requirement of this unit for learners to have any detailed prior knowledge or understanding of particular products used. Questions will provide sufficient product information to be used, applied and interpreted in relation to the taught content. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts.	R105 - LO: 1, 2, and 3 are assessed through an externally set written examination paper, worth a maximum of 60 marks and 1 hour in duration. Final Exam

Inspire, Challenge, Enrich

	Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO’s Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO’s Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO’s Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Exam Criteria Assessment WWW/EBI Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO’s Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	Exam Criteria Assessment WWW/EBI Verbal feedback Mini Quizzes- Rosenshine Principle - 5 question quiz. (memory recall) Peer Assessment- linked to LO’s Self-Assessment/ Self End of topic Assessment/ mock exams Student reflections- DIRT	
--	--	--	--	---	---	--