Richard Lander School — Design Technology Curriculum Overview - 7/8/9

BE THE BEST YOU CAN BE

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reporting Y7	CfCs	BfL & LAL		BfL & LAL		BfL & LAL
Year 7	**Health and safety instruction** **Jewellery project** - this is the only project in KS3 that covers all aspects of a "design and make task". Students will cover the following skills to a basic level; brief analysis and research, design ideas (learning how to draw in 3d, render, annotate), development, planning, manufacture (one off and batches) and evaluation. **Machines:** Scroll saw. **Material focus:** 3mm MDF, Pewter. **Process:** casting. **Maths link**: percentages, calculating manufacturing costs and adding profits. **Extended writing:** evaluation.		**Graphics module:** 4x groups rotate through 113 to complete the CAD part module, learning Coreldraw (used to drive the machines later in Y9 and KS4). Introduction to Isometric drawing, surface and tonal rendering. **Movement:** Art Neoveou. **Trinket box project:** making task with focus on planning in folderwork. **Machines:** Linisher and pillar drill. **Material focus:** Plywood, PVA foamboard. **Processes:** changing saw blades		**Doorhanger Project:** skills covered, User design, designing, practical skills consolidating skills and developing competence and independence on machines and CAD used during the last two terms. Application of finishes. **Material:** 6mm MDF, HIPS. **CAD/CAM:** Vinyl cutter	**Curriculum Enrichment Week**
Reporting Y8	CfCs	BfL & LAL		BfL & LAL		BfL & LAL
Year 8	**Health and safety instruction** **Rotation of 3x projects** - To allow all groups to complete the graphics project in 113. **Graphics project:** Endangered species 6 week project where students research and investigate causes why animals become endangered - links to ecological concerns. Culminating in a logo to promote awareness. **Skills:** research of endangered species, analysis of logo design, design and development of ideas in CAD (building on coreldraw skills taught in Y7). **Birdfeeder project:** Introduction to Engineering. **Materials:** Aluminium sheet, HIPS **Processes**: reading orthographic drawings, marking out, cold metal forming, vacuum forming, riveting. **Maths link:** Tolerances. **Clocks:** Development of practical skills using the 3x main workshop machines. **Materials:** 6mm MDF. **Processes:** developing cutting skills, drilling and material finishes. **Literacy:** writing a specification				**Bug boxes:** skills covered, design ideas drawn in 3d, rendered, planning and development of ideas. Building on skills and competences developed during Y7, students have more scope for customisation. Changing drill bits. **Material:** locally sourced softwood, plus reclaimed materials from previous projects. **Literacy:** consideration of sustainable issues. **Movement:** Art Deco	**Curriculum Enrichment Week**
Reporting Y9	CfCs	BfL & LAL		BfL & LAL		BfL & LAL
Year 9	**Health and safety instruction** **Polymers:** Students learn about Polymer production and their impact on the environment, link to ecological concerns, introduction to iterative design (phone holder), commercial production, classifications of two types of polymer. **Materials:** Acrylic. **Processes:** Strip heater, injection moulding. **CAD/CAM:** Laser cut models. **Focus of folderwork:** creative design and presentation.	**Timbers:** Students learn about timber production and their impact on the environment, link to ecological concerns, introduction to more complex construction joints (halving and tenon joints), how manufactured boards are made. **Materials:** Pine, plywood, 9mm MDF. **Processes:** construction techniques, laminating, natural timber finishes.	**Systems and Control:** Students solder a nightlight circuit, learing about; PCB production, input - process - output, component symbols and values **Maths link:** Resistor colour codes, tolerances, nets. **Processes:** Soldering, manufacture of net for packaging.		**Sustainable design project:** Final design and make project giving students opportunities to use materials and processes of their chosing. Developing competence and confidence on machines. **Pen Pot project:** Focused team working project where students have to produce a batch of pen pots.	**Curriculum Enrichment Week**

Richard Lander School — Design Technology Curriculum Overview - 10/11

BE THE BEST YOU CAN BE

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reporting Y10	CfCs	BfL & Grades	CfCs	BfL & Grades	BfL & Report	
Year 10 Graphics	**Intorduction to Graphic Design** — **Unit 1- Introduction to graphic design components** - Students will be producing a PowerPoint presentation to show their understand of the 6 main components. Imagery, typogaphy, line, composition, colour and tone. Students will be leanring how to analyse existing examples of good graphic design and will be experimenting using software. Stuents will be using Corel Draw, Photoshop and Illustrator. Students will develeop a poster for a social campaign such as deforestation / global warming. link to ecological concerns.			**Unit 2: Work of others** . Students are to research a graphic design dicipline of their choice. They will learn the difference between formats and sources and can justify how relible they are. They are to develop their understanding of design components by annotating the work of designers. Develop their skills on software as they create a design which is influenced by the chosen designer on Photoshop / Corel Draw / Illustrator.		**Work Experience Week**
Year 10 Engineering	**Health and safety instruction** — Introduction to engineering. Students will learn about the 9 disciplines of engineering and will look at making and development of a range of products.	Students will rotate through 2 modules. 1. **Fabrication engineering:** Practical work - Put n' Take game and balance toy. Introduction to Centre Lathe. Risk assessments HASAWA 1974. Metal theory. Pneumatics theory. **2. Engineering Drawing:** Practical work - pen pot. Isometric and orthographic drawing. BS 8888. Use of CAD package 2d design tools and coreldraw.	Students will rotate through 2 modules. **1. Fabrication engineering**: Practical work - Put n' Take game and balance toy. Introduction to Centre Lathe. Risk assessments HASAWA 1974. Metal theory. Pneumatics theory. **2. Engineering Drawing:** Practical work - pen pot. Isometric and orthographic drawing. BS 8888. Use of CAD package 2d design tools and coreldraw.	**Systems and Control** Student will solder and then house an electronic circuit	Preperation for NEA work in Year 11. **Coat hook:** Students learn about designing in engineering through an aluminium casting design and make project. CAD drawing. Introduction to the Turret Mill.	
Year 10 Resistant Materials	**Health and safety instruction** — **Revision box:** Classification of 3 types of timber, properties and specific types identified, production methods involved from raw to stock form links to ecological concerns,, environmental impacts, tools and processes involved when working on them inc router, construction methods hinges, dowel joints, finishes applied. Student learn theory whilst making the box and then fill it with revision resources inc flash cards, sample materials.	**Flat Pack Rack:** students learn about mass production techniques, CAD/CAM in industry, QC, knock down fittings, JIT production. Card net box produce with lasercutter.	**Iteritive design project:** mini GCSE NEA project, to develop on iteritive design task in Y9. Desk lamp design brief. Electronics, user defined specification. Students use range of strategies to design and develop working model.	**Smart and composite materials:** Students learn about a range of different smart and new materials	**Mechanisms / forces / structures:** Students make a revision pack of levers, linkages, gears whilst learning the theory.	**NEA:** Students begin NEA section A.
Reporting Y11	CfCs & Grades	Rep & Grades	CfCs & Grades	BfL & Grades		
Year 11 Graphics	**Health and safety** — **Unit 3** - how to respond to a brief. Students learn how to analyse a brief. .i.e. target user, client requirements. They are to draw design ideas and expeirment with different components. Write evaluations.	**10 hour PPE split into five 2 hour exams**	**Exam Prep:** Go over the PPE. Revise all 6 components. A series of short briefs at the begging of lessons to prepare hem for thinking on the spot	**EXAM**	**Unit 4:** Research how designers present their work and career paths into Graphic Design. Students to create a portfolio of their work produced over the duration of the course.	
Year 11 Engineering	**Health and safety instruction** — **Preperation for Component 3.** Follow text book of tasks, data collection methods, recording and presenting data, analysing results. CAD drawing, design development. Revision of materials and processes covered in Com1 and Com 2.	Topic for Component 3 released. Preperation.	**First attempt at Component 3 - external examination**	Preperation/revision for students who have not passed Component 3.	**Second attempt at Component 3 - external examination**	

Year 11 Resistant Materials	**Health and safety instruction**	Complete section A and B -analysing the contextual challenge, identify design possibilities, investigate client needs and wants and factors including economic and social challenges. Students should also use the work of others (past and/or present) to help them form ideas. Based on conclusions from their investigations students will outline design possibilities by producing a design brief and design specification.	Complete section C - Design Ideas - Students should explore a range of possible ideas linking to the contextual challenge selected. These design ideas should demonstrate flair and originality and students are encouraged to take risks with their designs. Students may wish to use a variety of techniques to communicate.	Complete section D - Design Development - Students will develop and refine design ideas. This may include, formal and informal 2D/3D drawing including CAD, systems and schematic diagrams, models and schedules. Students will develop at least one model, however marks will be awarded for the suitability of the model(s) and not the quantity produced. Students will also select suitable materials and components communicating their decisions throughout the development process. Students are encouraged to reflect on their developed ideas by looking at their requirements; including how their designs meet the design specification. Part of this work will then feed into the development of a manufacturing specification providing sufficient accurate information for third party manufacture, using a range of appropriate methods, such as measured drawings, control programs, circuit diagrams, patterns, cutting or parts lists.	Complete section E - Realisation - Students will work with a range of appropriate materials/components to produce prototypes that are accurate and within close tolerances. This will involve using specialist tools and equipment, which may include hand tools, machines or CAM/CNC. The prototypes will be constructed through a range of techniques, which may involve shaping, fabrication, construction and assembly. The prototypes will have suitable finish with functional and aesthetic qualities, where appropriate. Students will be awarded marks for the quality of their prototype(s) and how it addresses the design brief and design specification based on a contextual challenge	Complete section F - Evaluation - Within this iterative design process students are expected to continuously analyse and evaluate their work, using their decisions to improve outcomes. This should include defining requirements, analysing the design brief and specifications along with the testing and evaluating of ideas produced during the generation and development stages. Their final prototype(s) will also undergo a range of tests on which the final evaluation will be formulated. This should include market testing and a detailed analysis of the prototype(s).	Revision and preperation for exam		