Design and Technology RM	Half Term 1 Learning Overview	Half Term 2 Learning Overview	Half Term 3 Learning Overview	Half Term 4 Learning Overview	Half Term 5 Learning Overview	Half Term 6 Learning Overview
Year 10	**Core Technical Principles (Wks 1–7)** **New & emerging technologies**: robotics & automation – JLR/BMW case study; CAD, CAM, FMS, JIT & lean manufacturing **Enterprise**: market pull vs technology push, crowdfunding, virtual marketing, Fairtrade & co-operatives **People, society & culture**: designing for user groups (the 'pink tax'); redesign a product for a specific user; freehand sketching **Sustainability & the environment**: finite/non-finite resources, waste, pollution, planned obsolescence; critical evaluation of products **Ethics**: labour, sourcing & production methods in large companies **Energy generation & storage**: renewable vs non-renewable, nuclear debate, kinetic pumped storage, alkaline & rechargeable batteries **Systems approach to designing**: input – process – output; systems diagrams **Mechanical devices**: 4 types of motion; levers, linkages & rotary systems – card/split-pin modelling	**Materials & Mini-NEA Project 1: MP3 / phone docking station (Wks 8–14)** **Materials & working properties**: ferrous, non-ferrous, alloys; thermoforming & thermosetting polymers; natural, synthetic & blended fibres – card sorts & research packs **Selection of materials or components**: product analysis – function, aesthetics, environment, availability, cost, social/cultural/ethical factors **Practical skills audit**: build a basic phone stand – recall Yr 9 material knowledge **Designing**: explore & develop docking station ideas – sketching, modelling, testing, evaluation; introduce **iterative thinking** **Ecological & social footprint**: the six Rs; carbon footprint – mobile phone case study **Using & working with materials**: physical & working properties; modifying properties – material testing **Sources & origins / stock forms**: primary sources, conversion & stock sizes; **scales of production**	**Project 1: Manufacture, Quality & Forces (Wks 15–20)** **Manufacture of prototype**: shape, fabricate, construct & assemble using production aids **Tolerances**: cutting, shaping & forming to a tolerance; link to quantity production; maths link – **nesting** exercise **Quality control vs quality assurance**: measurable QC checks; recording evidence of checks & improvements **Surface treatments & finishes**: preparation & application to enhance functional & aesthetic properties; justify chosen finish **Reflection & evaluation**: how could the design be improved? What skills are needed next? **Forces & stresses**: tension, compression, bending, torsion, shear; reinforcing materials – skyscraper case study **Practical material testing**: manipulating materials to resist / work with forces	**Mini-NEA Project 2: Lighting – building iteration into a project (Wks 21–27)** **The work of others**: independent research into a past/present designer or company; presentation & product analysis **Generating imaginative & creative designs**: identify a client/user; sketch & model lamp ideas inspired by the chosen designer **Investigation, primary & secondary data**: client interview, market research, **anthropometrics & ergonomics** **Environmental, social & economic challenge**: constraints on designers; ethical responsibilities **Writing a design brief** and **design specification** from research analysis – maths: comparing & presenting data **Iterative design development**: revisit ideas using client feedback **Communication of design ideas**: isometric & perspective, exploded diagrams, working drawings, CAD, schematics **Prototype development**: model the lighting outcome; test against brief – function, aesthetics, marketability	**Project 2: Realising the Lighting Prototype (Wks 28–33)** **Selection of materials & components**: functionality, cost & availability; costing sheets; revisit stock sizes **Tolerances & material management**: working accurately, planning cuts, nesting; jigs, templates & production aids **Measuring & marking out** for an accurate, quality prototype – peer assessment of accuracy & waste **Specialist tools & equipment**: correct, safe selection of hand tools & machinery; pupil-led tool demonstrations **Specialist techniques & processes**: diary/planning to drive independent progress **Surface treatments & finishes**: experiment, compare & justify finishes **Final prototype** produced to a high standard – client feedback & evaluation	**Industry & Commercial Practice and NEA Launch (Wks 34–38)** **Using & working with materials**: recap properties from previous projects; product analysis of hand-made products **Modifying materials** to change their properties (additives, stabilisers) – redesign an existing product **Scales of production**: one-off, batch, mass & continuous – how volume changes design, materials & manufacture **Commercial processes**: video case studies; benefits of commercial processes in batch & mass production **Designing for mass production**: features that make products suitable for volume manufacture **NEA begins (Wks 36–38)**: AQA contextual challenges released 1 June – select context; start **identifying & investigating design possibilities**

	Developments in new materials: modern & smart materials, composites, technical textiles **Materials & their working properties**: strength, toughness, hardness etc.; papers & boards, timbers	**Manufacturing specification & working drawings** – maths links: quantities, cost & sizes **Begin prototype manufacture**: marking out, production aids, tools & equipment				
Year 11	**NEA – Iterative Design Project (student-directed, depending on project)** **Section A – Identifying & investigating design possibilities**: client/user research, primary & secondary investigation, the work of others **Section B – Producing a design brief & specification**: analyse research; justify brief & measurable specification **Section C – Generating design ideas**: wide range of imaginative ideas; sketching, modelling & CAD; client feedback **Exam knowledge** revisited through the NEA as it arises (materials, tolerances, the work of others)	**NEA – Iterative Design Project (continued)** **Section D – Developing design ideas**: iterative development through modelling, testing & client feedback; final design proposal **Communication**: working drawings, exploded views, CAD, manufacturing specification **Section E – Realising design ideas**: material selection & planning; begin manufacture of final prototype **Quality & tolerance** recorded throughout manufacture	**Mock Exams & NEA Completion (Wks 13–18)** **Mock exam** (Wk 13): full written paper – core, specialist & designing and making principles **Section E – Realising design ideas** (continued): complete high-quality prototype; specialist tools, techniques & finishes **Section F – Analysing & evaluating**: testing against specification, client/user feedback, justified improvements **NEA portfolio finalised & submitted** for internal assessment & moderation	**Exam Revision (Wks 19–24)** **Mock feedback** – targeted re-teaching of gaps **Core technical principles**: new & emerging technologies, energy, new materials, systems, mechanical devices, materials & properties **Specialist technical principles**: selection of materials, forces & stresses, ecological & social footprint, sources & origins, stock forms, scales of production, specialist processes, finishes **Exam technique**: maths skills, extended-response & 'designing' questions	**Exam Revision & Preparation** **Designing & making principles**: investigation, the work of others, design strategies, communication, prototype development, tolerances, material management **Past papers & SAMs** under timed conditions; mark-scheme self & peer assessment **Personalised revision** from question-level analysis; retrieval practice & knowledge organisers **GCSE written exam** (2 hrs, 50%) – summer exam series	**Exam Season** Final revision sessions as timetabled **GCSE D&T written paper** sat Course complete – NEA (50%) + written exam (50%)