**LSA D&T, Three Year Plan Design and Technology GCSE**

**(Sept 2018 onwards} Version 2018 06 20**

**Year 9**

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| **Year 9 Term 1, week number**  **1,2,3 Maths skills**  **4, 5, 6, 7, 8 Cad and Graphics Skills, work though SW Intro booklet and Amplifier booklets. Designing a laser cut amplifier and a Xmas Project in CAD and also using Orthographic Isometric and 2 point perspective, with annotation and rendering.**  **HW to cover**  categories and types of papers and boards:  papers including:  • bleed proof, cartridge paper, grid, layout paper. tracing paper  boards including: corrugated card, duplex board, foil lined board, foam core board  Ink jet card. Solid white board.  **10, 11 Laser cut USB or 9V Xmas project and write up**  **12 Revise and Test of Term 1** | Pupils will be encouraged to download Solidworks, Yenka, Tech soft and Pic for Micros.  Assessment of Classwork and Homework.  Assessment of CAD and Graphics Practical Practical Assessment of Xmas Project |
| **Year 9 Term 2, week number**  **1 Population and soldering of Amplifier pcb**  **2 Write up of above – see PPT and help sheets on SMH etc.**  **3 Assembly of case and PCB**  **4 Write up of the above**  **5, 6 Cad and hand graphics of all parts of the amplifier.**  **7,9 Spec and customer / client / user. Access FM of similar products, costing in excel.**  **9,10 Materials unit , see PPT**  **CW and HW, very, pupils to produce a report that covers**  A} an overview of the main categories and types of natural and manufactured  timbers:  hardwoods including: ash, beech, mahogany, oak, balsa  softwoods including: larch, pine, spruce.  Manufactured boards including: medium density fibreboard (MDF), plywood, chipboard.  B} Categories and types of metals and alloys:  ferrous metals including:  low carbon steel, cast Iron, high carbon/tool steel, nonferrous metals including:  • aluminium, copper, tin, zinc  alloys including:  •brass stainless steel, High speed steel.  C} Plastics an overview of the main  categories and types of polymers:  thermoforming including: acrylic (PMMA),  high impact polystyrene (HIPS},high density polythene (HDPE), polypropylene (PP), polyvinyl chloride (PVC), polyethylene terephthalate (PET).  Thermosetting including: epoxy resin (ER),  melamine-formaldehyde (MF). phenol formaldehyde (PF), polyester resin (PR), Urea–formaldehyde (UF).  D} Computer aided design (CAD)  computer aided manufacture (CAM)  flexible manufacturing systems (FMS)  just in time (JIT). Lean manufacturing. planned obsolescence  design for maintenance ethics & the environment.  **11,12, Mechanisms , structures write up, see PPTs**  12 & 13 Revision then and Test of term 2 and DIRT of Test | Assessment of soldering and assembly  Assessment of written work on materials |
| **Year 9 Term 3, week number.**  **1,2,3,4 Textile theory , practical and write up**  **5,6,7,8, Electronic Components , circuits and Yenka**  **9.10,11, 12 Dice PCB population , programming and write up**  12 & 13 Revision then and Test of term 3 and DIRT of Test | Assessment of **Textile theory, practical and write up.**  Assessment of **Dice PCB population , programming and write up** |

**Year 10**

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| **Year 10 Term 1 week number**  1,2,3,4 Ohms Law, Power, current Resistors. See question sheets.  Bread boarding of LEDs & resistors, use of meters.  6,6,7,8 using Yenka to design designed a PCB for a 555 Astable. Breadboard the 555 Astable circuit, quality 2D and 3D of all components, table of components and used with symbols.  9,10,11 Famous designer and companies,  Watch videos on the above, write ups, past exam questions.  12 & 13 Revision then and Test of term 1 and DIRT of Test | Exam style questions assessment  CAD Exercises and 3D printing  Write up on companies and designers |
| **Year 10 Term 2 week number**  **1,2,3,4,5,6 3D printing project and 2D laser cutting project and write ups.**  **7,8,9,10 Textiles theory and project.**  **Textiles LED Badge and in class and for HW** Students to write a report on  categories and types of textiles:  natural fibres including: cotton, wool, silk.  Synthetic fibres including:  polyester, polyamide (nylon), elastane (lycra).  Bended and mixed fibres including:  • cotton/polyester.  Woven including: plain weave  non-woven including; bonded fabrics, felted fabrics knitted textiles  **Included in the textiles project;** Enterprise based on the development of an effective  Business innovation: crowd funding, virtual marketing and retail, co-operatives fair trade.  12 & 13 Revision then and Test of term 2 and DIRT of Test | Assessment of practical work and CAD works / write-up ups  Assessment of practical work and CAD works / write-up ups |
| **Year 10 Term 3 week number**  1,2,3,4 theory of Vacuum forming, laser cutting 3D printing, casting, injection moulding. **Make a case for the DICE, pcb and battery, possibly vacuum forming.**  5,6,7,8 Environmental issues, sustainably, electricity and how its generated renewables, light up the word, video, Q&A, Essay.  **9, 10** How to etch a PCB and information on SMT and how and why SMT is used in mass produced Electronics worldwide.  11 & 12 Revision then and Test of term 1 and DIRT of Test | Assessment of write-ups, practical and programming.  Assessment of written work  Assessment of written work |

**Year 11**

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| **Year 11 Term 1 week number**  1,2,3,4,5,6,7,8,9,10,  Design and Make Project NEA, E-Portfolio, use the running order exam board example as a template, more able pupils would be more pupils can develop their own format  Test of theory work to date.  11/12 Revise for mocks | Formative Assessment for each stage NEA Design and Make.  Mock Exam Dec / Jan of Y11 |
| **Year 11 Term 2 week number**  1,2,3,4,5,6 complete all of NEA by ½ term  {NEA only in catch-up in after Feb 1.2 term  7,8,9,10,11,12 Revise Y9 and Y10 work, PIC programming. Work through sample ad past papers | Mock Exam Dec / Jan of Y11  Final Summative Assessment for NEA Design and make.  Sample / past papers questions |
| **Year 11 Term 3**  1,2,3,4,5,6 Revision of Y9, Y10 and Y11 up to date of exam  Ditto if exam is after the Spring 1.2 term week | Final Exam at end of Y11. |