**Curriculum Intent**

A creative and practical application of Maths, Science and Technologies including ICT and the Arts and Crafts to enable students to interact and understand their built environment and how products can be designed and manufactured. We aim to create young people who are perceptive problem solvers and innovators who can confidently explore, use and create new technologies to develop, manage and build a sustainable society.

Year 10 is about reflecting and building on subject knowledge gained in KS3 to produce confident designers who can work with independence and maturity to create fully functioning products that satisfy the requirements of the Edexcel examination board. Students are timetabled **once a week** for a theory lesson. The theory lessons are mapped against the design and practical project they are currently undertaking.

Year 11 is about completing an electronic portfolio (using PowerPoint) and completing a practical piece to satisfy one context given by the Edexcel board (component 1) and completing all specification requirements in component 2 (the examination): Product design. Students receive three lessons a week and are timetabled **once a week** for a theory lesson.

**Curriculum Implementation**

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|  | | | **Autumn** | | **Spring** | | **Summer** | |
| HT1 | HT2 | HT3 | HT4 | HT5 | HT6 |
| **Year 10** | **BROAD** | Component 1: Coursework 50% | **Coaster project**  Students use skills and knowledge to design and construct a set of coasters and a box  Solid works, Using working drawings, Accuracy of marking out, Different wood joints, Finishing techniques, End grain, Datum lines, Manipulating hardwoods, Use of chisels, Use of planes, Marking gauge practice, Safe working practices, Depth gauge on pillar drill. Designers and their products. Laser cutter. CAD/CAM routing. Design process focusing on development skills. Veneers. Lamination. | | **Technology in the home**  Mini GCSE project.  Students learn about designing with a context. Using first-hand research. Iterative designing, user-centred design, and other techniques to avoid design fixation.  Completing a specification Using mood boards to create ideas Using Scamper techniques Third party manufacture. Mind mapping. Analytical and evaluative techniques. Specification development. Using techniques for idea generation. Using modelling to test ideas and iterative design. Using working drawings to manufacture items. | | **Technology in the home**  GCSE CONTEXT 1st June  Students start their GCSE coursework on 1st June.  Research for NEA.  Specification for NEA | |
| Component 2 Theory examination 50% | **Timbers and Design principles**  **Timbers, properties and uses. Origins, sustainability, and environmental factors of timbers. Techniques and processes when using Timbers. Social and moral issues with Timber supply. Stock sizes and availability.** | **Design principles**  **Design fixation**  **Design strategies**  **Drawing techniques** | **Further Materials**  **Textiles, boards, metals and polymers.** | **Energy and Storage**  **Sustainable energy types and uses. Electricity storage.** | **Electronics and mechanisms. Smart and modern materials.** | |
| Ways the KS4 curriculum goes beyond the national curriculum, including extra-curricular opportunities | We are very well resourced in Design and Technology. Students are able to enjoy using new technologies such as 3D printing, CNC milling and laser cutting alongside traditional tools and machines. | | | | | |
| **COHERENT** | Prior knowledge required to access this unit | KS3 Design and Technology course.  Use of safe working practices in the workshop. | Use of safe working practices in the workshop. 3D drawings (solid works) | Workshop skills and processes. Design strategies. Analytical and evaluative techniques.  Manufacturing techniques and joining and wasting processes. How to manage materials safely when manufacturing.  Use of safe working practices in the workshop. | | Design and manufacture of Technology in the home project.  Use of safe working practices in the workshop. | |
| Assessment | Practical box green sheet | Timber assessment  Coasters green sheet | Design ideas green sheet  Specification green sheet | Development green sheet  Solid works modelling |  |  |
| **EMPOWERING** | Key vocabulary | Different types of timbers  Different drawing views such as orthographic, isometric, oblique.  Key tools and equipment names | CAD.CAM router  Laser cutter, Vector  Raster, Export, ACCESS FMS, SCAMPER, User-centred design  Design fixation. Biomimicry, Collaborative design | Agro-textiles  Geo-textiles  Microns  Names of different polymers and their properties | Actuator  Thyristor and other component names | SMA and other smart material names  Piezoelectric and other modern material names | Risk assessments and  Control words such as respiration, |
| Opportunities to engage with different cultures/perspectives/voices | Students learn to be responsible designers, looking at Fairtrade and design variants, social and cultural effects on products. Student learn about designer from different cultures. | | | | | |
| Relevance to real-world and careers | Design and Technology is all about problem-solving, which is one of the top skills all employers seek. There are many different sectors where students can directly use other skills gained in design and technology, such as Engineering, Product design, CAD engineering, and Architecture, to name just a few. Further information on careers using Design and Technology are all referenced in out teaching and highlighted on the back of our student's workbooks | | | | | |
| **CHALLENGING** | Homework | Theory set on Teams | Theory set on teams | Research and Design homework set on Teams | Analytical and evaluative skills set on Teams | Theory set on Teams | Theory set on Teams |
| Super curricular recommendations | Isometric drawing practice. Card modelling. Solid works tutorials (free download for all LPSB students) | | | | | |

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|  | | | **Autumn** | | **Spring** | | **Summer** | |
| HT1 | HT2 | HT3 | HT4 | HT5 | HT6 |
| **Year 11** | **BROAD** | Component 1 NEA | Design ideas NEA  Design ideas review  Development of design | Development of NEA  Final idea  Manufacturing specification | NEA Manufacture | Examination practice and revision | Examination practice and revision |  |
| Ways the KS4 curriculum goes beyond the national curriculum, including extra-curricular opportunities | We are very well resourced in Design and Technology. Students are able to enjoy using new technologies such as 3D printing, CNC milling and laser cutting alongside traditional tools and machines. | | | | | |
| **COHERENT** | Prior knowledge required to access this unit | Year 10 course | | | | | |
| Assessment | Colour coding above and below target charts.  TES: 1 | Colour coding above and below target charts | Colour coding above and below target charts  TES: 2 | Colour coding above and below target charts | Final GCSE examination |  |
| **EMPOWERING** | Key vocabulary | Students are now in a controlled assessment production period, where they are encouraged to use the wording from prior learning. | | | | | |
| Opportunities to engage with different cultures/perspectives/voices | Students are asked to consider the moral and social implication of their design in their final evaluation. | | | | | |
| Relevance to real-world and careers | Design and Technology is all about problem-solving, which is one of the top skills all employers seek. There are many different sectors where students can directly use other skills gained in design and technology, such as Engineering, Product design, CAD engineering, and Architecture, to name just a few. Further information on careers using Design and Technology are all referenced in out teaching and highlighted on the back of our student's workbooks | | | | | |
| **CHALLENGING** | Homework | NEA: independent study. Assignments set on Teams + theory revision | | | | | |
| Super curricular recommendations | TED talks. University websites. Reading about designers, materials and engineers. There are a selection of books in the library for students to choose from. Students are given video links on Teams to watch as part of their homework on designers, design movements and how to revise. Students have access to download their own copies of Solid Works and are encouraged to use this to design more technical products or follow some online tutorials. There is also a super curriculum outline available on the website for transitioning from year 11 to year 12 studies. | | | | | |