**Key Stage 5 Curriculum Map** Department: Design and Technology – Design and Make Tasks

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| **Subject**  **Year** | Year 12  Design and Technology | *Overview/rationale & statement of importance – what learners can expect to gain from studying this subject this year*  In Year 12, students will gain deeper theoretical knowledge on a wider range of materials. These include: timbers, metals, papers and boards, polymers, modern materials, composites and SMART materials. Whilst applying these to design and make tasks, which are aimed at enhancing the skills acquired from studying D&T at GCSE. Furthermore, Yr12 students will also gain knowledge and understanding of how scales of production, health and safety and the use of digital design have an impact in design and manufacturing industries. | | | | |
| **No of weeks/lessons** | Term 1 – | Term 1 – 3 weeks (8 lessons) | Term 1 – 3 weeks (8 lessons) | Term 2 – phase 1 | Term 2 – phase 2 |  |
| **Unit Title** | Timber project – jewellery project | Polymer Project – egg holder | Metals Project - pendant | Mock NEA - | Mock NEA |  |
| **Objective** | To supplement the timbers theory students are to design and make a small scale jewellery box using a mixture of hardwoods and softwoods | To supplement the polymers theory students are to design and make an egg holder based on a design style using a range of thermoplastics | To supplement the metals theory students are to design and make a pendant using aluminium or pewter | To develop students skills and present the requirements for the NEA. | To develop students skills and present the requirements for the NEA. |  |
| **Iterative Links** | Use of skills developed at GCSE and to enhance theoretical learning | Use of skills developed at GCSE and to enhance theoretical learning | Use of skills developed at GCSE and to enhance theoretical learning | To further develop students deeper thinking and enhance skills learnt from GCSE NEA | To further develop students deeper thinking and enhance skills learnt from GCSE NEA. Particularly, types of drawing skills |  |
| **Knowledge & Understanding** | To be able to use a range of processes linked to shaping timbers for redistribution. | To be able to use a range of processes linked to shaping, cutting and forming polymers | To be able to use a range of processes linked to shaping, cutting and forming alloys and non-ferrous metals  To know the casting process | To be able to carry out the following:  To produce initial investigations  To draft up a challenging brief and specification  To produce a product analysis on their chosen individual area of study | To be able to carry out the following:  To choose one idea and develop the ideas through modelling, CAD drawings and sketches  To produce an exploded drawing of the final idea  To produce an orthographic drawing of the final idea  To suggest possible materials and give reasons taking full account of their properties and characteristics |  |
| **Skills** | Scroll saw  Laser cutter  Wasting process  Shaping and finishing  Enhancement of material  Presenting ideas | Use of laser cutter  Vacuum former  Line bender  Thermoforming techniques  Presentation of ideas | Pewter casting process  How to make the mould for the cast  Enhancement and finishing skills | Investigations  Produce a specification  Communicating ideas in one point and isometric | Development drawing skills  Modelling skills  Presenting ideas using exploded drawings and orthographic drawings |  |
| **Literacy** | Annotating design and communicating ideas | Annotating design and communicating ideas |  | Annotating ideas  Analysing products | Annotating ideas  Evaluation of materials  Using theory in annotations |  |
| **Numeracy** | Measuring / sizing materials  Setting speed/power on CNC machines | Measuring / sizing materials  Setting speed/power on CNC machines | Measuring / sizing materials | Interpreting data  Isometric drawings | Sizing, scaled drawings |  |
| **Assessment** | Design Ideas - presentation  Final Product  Verbal feedback throughout process | Development of idea detailed annotation  Final Product  Verbal feedback throughout process | Final outcome  Verbal feedback throughout process | Assess:  Task Analysis  Design Brief and Specification  Quality of design ideas | Assess:  Quality of development work against NEA marking |  |
| **Health and Safety** | General workshop H&S rules  CLEAPSS risk assessments for specific machines  COSHH extraction on laser cutter | General workshop H&S rules  CLEAPSS risk assessments for specific machines  Heatproof gloves for thermoforming processes | General workshop H&S rules  CLEAPSS risk assessments for specific machines and forge  Heatproof gloves for pewter casting process |  | General workshop H&S rules  CLEAPSS risk assessments for specific machines and equipment, including hot wire cutter |  |
| **Cross-curricular** | Science, Maths, Engineering | Science, Maths, Engineering | Science, Maths, Engineering | Science, Maths, Engineering | Science, Maths, Engineering |  |