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

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| **Subject****Year** | Year 12Design 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 metalsTo know the casting process | To be able to carry out the following:To produce initial investigationsTo draft up a challenging brief and specificationTo 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 sketchesTo produce an exploded drawing of the final ideaTo produce an orthographic drawing of the final ideaTo suggest possible materials and give reasons taking full account of their properties and characteristics |  |
| **Skills** | Scroll sawLaser cutter Wasting processShaping and finishingEnhancement of materialPresenting ideas | Use of laser cutterVacuum formerLine benderThermoforming techniquesPresentation of ideas | Pewter casting processHow to make the mould for the castEnhancement and finishing skills | InvestigationsProduce a specificationCommunicating ideas in one point and isometric | Development drawing skillsModelling skillsPresenting ideas using exploded drawings and orthographic drawings |  |
| **Literacy** | Annotating design and communicating ideas | Annotating design and communicating ideas |  | Annotating ideasAnalysing products | Annotating ideasEvaluation of materialsUsing theory in annotations |  |
| **Numeracy** | Measuring / sizing materialsSetting speed/power on CNC machines | Measuring / sizing materialsSetting speed/power on CNC machines | Measuring / sizing materials | Interpreting dataIsometric drawings | Sizing, scaled drawings |  |
| **Assessment** | Design Ideas - presentationFinal ProductVerbal feedback throughout process | Development of idea detailed annotationFinal ProductVerbal feedback throughout process | Final outcomeVerbal feedback throughout process | Assess:Task AnalysisDesign Brief and SpecificationQuality of design ideas | Assess:Quality of development work against NEA marking |  |
| **Health and Safety** | General workshop H&S rules CLEAPSS risk assessments for specific machinesCOSHH extraction on laser cutter | General workshop H&S rules CLEAPSS risk assessments for specific machinesHeatproof gloves for thermoforming processes | General workshop H&S rules CLEAPSS risk assessments for specific machines and forgeHeatproof 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 |  |