**Key Stage 5 Curriculum Map** Department: Design and Technology Term 1 - Theory

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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 to enhance 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 the design and manufacturing industries. | | | | |
| **No of weeks/lessons** | Term 1 – 2 lessons | Term 1 – 3 weeks (8 lessons) | Term 1 – 3 weeks (8 lessons) | Term 1 3 weeks (8 lessons) | Term 1 (2 weeks) 4 lessons | Term 1 (2 weeks) 4 lessons |
| **Unit Title** | Materials and their applications  Classification of materials | Performance characteristics of woods with joining and bending techniques; and finished | Performance characteristics of polymers, biodegradable polymers and polymer based sheet and film with processes, finishes and folding techniques | Performance characteristics of metals with processes and finishes | Performance characteristics of papers and boards with processes and finishes | Composites  Smart materials  Modern materials |
| **Objective** | Introduce students to the appropriate uses of materials are their common mechanical and physical properties. | To build on pupils knowledge of specific Timber based materials | To enhance students knowledge and understanding of polymers and biodegradable polymers | To enhance students knowledge and understanding of metals, processes and finishes | To enhance students knowledge and understanding of paper and boards along with processes and finshes | To enhance students knowledge and understanding of composites, smart and modern materials |
| **Iterative Links** | Building on what has been covered at GCSE but in more detail | Pupils covered this at GCSE for the specialist technical principle material area. | Building on knowledge and understanding of polymers covered at GCSE | Building on knowledge and understanding of metals covered at GCSE | Building on knowledge and understanding of papers and boards covered at GCSE | Building on knowledge and understanding of composites, Smart and modern materials covered at GCSE |
| **Knowledge & Understanding** | To develop knowledge and understanding of the physical and mechanical properties and working characteristics of materials.  To know the classification of materials.  To be able to know how materials are tested in the workshop | To gain knowledge and understanding of specific names, characteristics, applications and stock forms of timbers  To gain knowledge and understanding of how timbers can be formed, shaped and processed.  To gain knowledge and understanding of timbers are enhanced and finished | To gain knowledge and understanding of specific names, characteristics, applications and stock forms of polymers  To gain knowledge and understanding of how polymers can be formed, shaped and processed.  To gain knowledge and understanding of how polymers are enhanced and finished | To gain knowledge and understanding of specific names, characteristics, applications and stock forms of metals  To gain knowledge and understanding of how metals can be formed, shaped and processed.  To gain knowledge and understanding of metals are enhanced and finished | To gain knowledge and understanding of specific names, characteristics, applications and stock forms of paper and board  To gain knowledge and understanding of how papers and boards can be formed, shaped and processed.  To gain knowledge and understanding of how paper and boards are enhanced and finished. | To gain knowledge and understanding of specific names, characteristics, applications and stock forms of the following materials:  Composite materials  Smart materials  Modern materials |
| **Skills** | To link mechanical and physical properties to materials. | To link materials and characteristics to applications and be able to give reasons why. | To link materials and characteristics to applications and be able to give reasons why. | To link materials and characteristics to applications and be able to give reasons why. | To link materials and characteristics to applications and be able to give reasons why. | To link materials and characteristics to applications and be able to give reasons why. |
| **Literacy** | Theoretical work, exam questions | Theoretical work, exam questions | Theoretical work, exam questions | Theoretical work, exam questions | Theoretical work, exam questions | Theoretical work, exam questions |
| **Numeracy** | Workshop testing – measurements and data | Maths based questions linked to topic | Maths based questions linked to topic | Maths based questions linked to topic | Maths based questions linked to topic | Maths based questions linked to topic |
| **Assessment** | SWIK: exam style questions | SWIK: short exam style questions (F)  End of unit test (S) | SWIK: short exam style questions (F)  End of unit test (S) | SWIK: short exam style questions (F)  End of unit test (S) | SWIK: short exam style questions (F)  End of unit test (S) | SWIK: short exam style questions (F)  End of unit test (S) |
| **Health and Safety** | General workshop H&S rules when testing materials |  |  |  |  |  |
| **Cross-curricular** | Science, Maths, Engineering | Science, Maths, Engineering | Science, Maths, Engineering | Science, Maths, Engineering | Science, Maths, Engineering | Science, Maths, Engineering |

Approximately 60 lessons

35 lessons