Product Design

Aims:

- Theory and understanding of materials, manufacturing and designers of the past.
- Developing creative design ideas and understanding the iterative design process.
    - Practical making skills both in the workshop and in use of CAD/CAM.

Content:

Product Design in Year 9 builds on key skills and content from Years 7 and 8 alongside developing an understanding of electronics. Students will gain making skills both in the workshop with resistant materials and in using CAD/CAM equipment. Students will understand the design process, where ideas are created, modelled, crafted and then evaluated. There will be more in-depth theory lessons on topics such as materials, materials of the future and mechanisms.

Curriculum Map

Year	Term	Curriculum	Assessment
9	Term 1	What is design? How have designers of the past created products? Students will learn about materials, manufacturing and designers of the past. Students will apply this knowledge to create a wooden phone box inspired by a chosen design era. The project will include drawing, theory, computer and practical lessons. Students will develop workshop skills in shaping and finishing wood, acrylic and metal. Theory lessons will give students a deeper understanding of how products are manufactured in the real world.	Theory lessons will be end with a test. This will include simple questions and a longer answer on the topics of materials, materials of the future and design eras. Design work will be assessed as in Year 8 to reflect presentation, complexity of ideas and idea communication. Practical skills will be assessed in the completion of a workshop product.
	Term 2	What are electronics? How can we programme and use electrical systems? Students will begin to understand common electrical components and input, process, output systems. Students will build on manufacturing skills and will construct a programmable LED smart light. Theory lessons will complement this and topics will include energy production and sustainability. Students will further develop drawing and presentation skills and will experiment with different media to present ideas.	Theory lessons on energy, electrical systems will have a test. Design work will be assessed to reflect presentation and communication of design idea. CAD/CAM and more traditional manufacturing techniques will be assessed along with knowledge of programmable electronics.

	Term 3	How can we control movement? Students will understand forces, motion and common mechanisms. Knowledge will be applied to a CAM toy. Students will really get to grip with the design process and will design for a specific target user. Students will understand about designing for disability or different cultures. The iterative design process will be explored and ideas will be modelled in 2D and 3D before a final outcome developed. Students will be given increased responsibility to adapt a design brief and to work in different materials dependant on ideas.	Theory lessons will include simple questions and a longer answer on the topics of forces, mechanisms, movement. Design work will be assessed on communication of ideas and also how ideas are designed for different target groups. Practical skills will be assessed in the completion of a workshop product.

Assessment:

Students will be assessed in three main areas including: 1. drawing/design/presentation, 2. Theory knowledge and written communication and 3. Practical work and material manipulation. Each termly project gives students the opportunity to work in these three areas. Students will now work in A3.

Extended Learning:

Students will extend the content of the three projects by having a focussed research, drawing or theory task. These will enhance the portfolio of work and will be crucial in building a stronger knowledge to come up with better ideas or to understand why a design idea needs to be developed that way.

Connection to the JTFS Approach:

Whole School Theme	How does Product Design support this?
STRIPE	Self-manager – Students will need to be organised and look after DT folder and portfolio. Students will need to finish some project work at home. Innovate and create – Through understanding how to get inspired. Where to get ideas from. Enquirer – Understanding how products are made and why?
STEAM	Maths and science will be needed in understanding electronics, mechanisms and also in accurate measuring of materials. Art knowledge will assist in developing and presenting ideas well.
Literacy	Students will need to communicate their ideas and research and be able to understand materials and manufacturing processes. Theory will be a major theme of the subject.
Numeracy	Numeracy is embedded throughout with the need to measure, sizes, shapes and tessellation, and also in programming electrical systems.
SMSC, British Values and Citizenship	Students will need to understand how designers of the past influence products and also the wider social implications of using materials to manufacture goods. In term 3 students will design for specific users and understand their need.