

Subject overview for: Design Technology (3D Design and Food Preparation & Nutrition)

1. Subject overview

The Design Technology curriculum at John Masefield High School focusses on combining traditional practical skills with creative and innovative thinking. It is sequenced for the natural progression of skill development from Key Stage 3 to Key Stage 4 via a mastery approach; sequentially building on skills already learned. Key Stage 3 is structured to embed key manufacturing techniques and a basic introduction to independent designing. Key Stage 4 students are able to explore a real-life design context and draw upon their own conclusions. The current GCSE 3D Design course (J175) is split into two assessed components a) 60% design and make portfolio b) 40% design and make externally-set task. Knowledge and understanding are developed throughout the course.

2. Key Stage Three summary (Year 7 and Year 8)

During Year 7 and Year 8 there are termly rotations. During the autumn, spring and summer terms, students will study traditional woodworking, product design/graphics and food technology. These subject specialisms aim to offer a wide range of practical skills with an under-pinning of theory.

Year 7 rotations

- **Product Design – The clock project;** Students research the Memphis design style and use this as inspiration to design an analogue clock. Students create their design using CAD/CAM, 2D Design and the laser cutter. Students design and make packaging for their clock, including promotional graphics.
- **Traditional woodworking – The lego box project;** Students explore specific engineering and manufacturing details via joinery and material properties, to manufacture a 'Lego style' wooden box.
- **Food preparation & nutrition:** Students learn basic key practical skills by cooking or baking 10 different dishes. Students also gain an understanding of food hygiene and safety, nutrition and food waste during their theory lessons.

Year 8 rotations

- **Traditional woodworking – Sweet dispenser:** Students manufacture a wooden sweet dispenser with a re-used & re-purposed jar. Within this rotation students learn about the 4 types of motion, sustainability and the '6 R's', materials and their properties, grain orientation, permanent and temporary fixings and the uses of different drill bits. Students also revisit how to refine woodworking using different sanding and smoothing methods.
- **Systems & control / electronics – The steady hand game:** Students manufacture a 'steady hand game.' Students learn to solder an electronic printed circuit board (PCB), learning the functions of each component. Students also learn to programme the circuit using Picaxe. Students enhance their joinery skills by manufacturing a wooden housing for these electronics. Students use software to design, and then to laser cutter some of the housing.
- **Food preparation & nutrition:** Students learn the science behind 'bread making' by baking several different bread styles. Students also explore the idea of simple meals to help build culinary confidence. Theory lessons focus on dietary needs and food provenance.

3. Key Stage Four summary

Year 9: Transition year

3D Design

- The Year 9 transition year builds on skills from the Year 7 and Year 8 rotations. During the first term students demonstrate these skills in a teacher assessed 'joinery build.' This embeds an independent, self-managed and mature approach to practical work in the workshops. Later projects, detailed below, give students an opportunity to learn new skills:
- **Term 1: Traditional woodwork skills:** Design and manufacture a 'small storage box.' Combining traditional hand wood work skills with CAD/CAM techniques.
- **Term 2: Product design and electronics:** Design and manufacture a 'moodlamp' using an LED and LDR circuit board, demonstrating mastery CAD/CAM skills (2D Design & the laser cutter).
- **Term 3: Graphics design and manufacture:** 'Point of sale unit and corporate identity' of a chocolate company. Use of CAD/CAM to improve quality products. Students will create a flat-pack unit made from foamboard, learning how to create tabs and inserts for stability and durability.

Food Preparation & Nutrition

- The Year 9 transition year builds on skills from the Year 7 and Year 8 schemes. During year 9 students food lessons are extended to 2 hours giving them the opportunity to cook more complex dishes, building on their existing skills and giving them an opportunity to become more independent and confident in the kitchen.
- **Term 1:** Year 9 students learn about food production and sustainability as well as being introduced to investigative tasks.
- **Term 2:** Students learn about the hospitality and catering industry and the job opportunities available.
- **Term 3:** Students learn about event planning and menu design.

Year 10 and Year 11: GCSE 3D Design/GCSE Food Preparation & Nutrition

GCSE 3D Design

Year 10 is broken into 2 parts, during the first half of this academic year students will design and manufacture a stereo speaker. During the second half of this academic year, students begin their NEA (non-examined assessment) Portfolio coursework.

- **Stereo Speaker project:** This project is used as a rehearsal for the coursework. The stereo speaker project helps students to build confidence in both their design and manufacturing abilities.
- **NEA Portfolio:** This is a design and manufacture coursework project worth 60% of the overall 3D Design qualification. Students explore a design context, set by the teacher, and research their own product to manufacture. Students demonstrate their design and practical workshop manufacturing skills, all documented and submitted as a portfolio.

Year 11 begins with the completion of the NEA Portfolio, started in year 10. Students will complete the manufacturing side of this project, as well as testing and evaluating their products and learning journey.

- **Practical examination:** The remainder 40% of this course is assessed via a 10-hour timed practical examination. Students are given a design context from the exam board; they then follow the same design process as the NEA portfolio but within a 10- hour time limit.

GCSE Food Preparation & Nutrition

Theory: Over the course of year 10 students are taught food preparation and theory through the food commodities. Each commodity looks at the provenance, growing and processing, classification, nutrition, food science, storage, and food hygiene and safety.

Practical: During year 10 students continue developing their practical skills by focussing on a range of higher order skills such as butchery, enriched yeast doughs, pastry, and presentation of dishes.

In year 11 students carry out 2 NEA (non-examination assessments) the first 15% assessment is an investigative task looking at the science behind food processes, and the second 35% assessment is a traditional cooking task based around a given brief, where students will need to plan, prepare and cook 3 separate dishes with accompaniments. The remaining 50% of this qualification is gained via a written examination.

4. Contribution to preparing for life in modern Britain/equalities

It is of real importance to us that Design Technology and Food Preparation and Nutrition is appealing, appropriate and accessible to all of our students. As a gender diverse department, we actively encourage females in technology by showing successes of women. We pro-actively consider disability within design work and request that students consider designing inclusively and for a wider and more complete target market. We seek to reflect that, in modern world, designers are drawn from all backgrounds. In addition to developing an aesthetic appreciation, we try to equip our students for the world of work through encouraging a problem-solving approach to the work that they undertake. Through working collaboratively and through looking at industry-standard practice, student become increasingly able to tackle projects in a confident and logical manner.

5. Contribution to careers provision

In a semi-rural area, it is possible that many of our students do not have direct access to, or knowledge of, the local and regional businesses involved in food, design, technology and engineering. Increasingly, we are giving students the opportunity to learn from professionals within these industries. We hope that more opportunities like this, will encourage them to consider a career in these areas, and will enthuse and motivate them in their work in school.