Design Technology and Food, Nutrition & Preparation - Course Overviews

Year 7	Rotation 1 (1 term) **Traditional wood work skills:** manufacturing of a 'lego inspired box' and understanding of workshop health and safety.	Rotation 2 (1 term) **Product Design / Graphics:** designing and manufacturing of an 'analogue clock' via CADCAM.	Rotation 3 (1 term) **Food preparation & nutrition:** Basic key practical skills and an understanding of food hygiene and safety, nutrition and food waste.
Year 8	Rotation 1 (1 term) **Traditional wood work and electronics skills:** manufacturing of a 'mono speaker kit and housing.'	Rotation 2 (1 term) **Product design / graphics:** Design and manufacture of a 'snakes and ladders inspired board game.'	Rotation 3 (1 term) **Food preparation & nutrition:** key 'bread making' practical skills and simple meals. Dietary needs and food provenance.
Year 9 **3D Design**	Term 1 **Graphics design and manufacture:** 'Point of sale unit and corporate identity' of a chocolate company. Use of CADCAM to improve quality products.	Term 2 **Product design and electronics:** Design and manufacture a 'moodlamp' using an LED and LDR circuit board kit.	Term 3 **Traditional wood work skills:** Design and manufacture a 'small storage box.' Combining traditional hand wood work skills with CADCAM techniques.
Year 9 **Food Preparation & Nutrition**	Term 1 Food production & functions of ingredients.	Term 2 Nutrition, sensory testing & hospitality industry.	Term 3 Food service, exam preparation, menu design & packaging.
Year 10 **3D Design**	Term 1 **Product design and electronics:** Design and manufacture a 'stereo speaker' Use of CADCAM to improve quality in outcome.	Term 2 **Product design and graphics:** An independent exploration project, to design and manufacture from a context rather than a brief 'products inspired by 20th century design.'	Term 3 GCSE Coursework – An independent design and manufacture project reflecting upon a set design context.
Year 10 **Food Preparation & Nutrition**	Term 1 Fruit, vegetables, meat, fish, poultry & eggs	Term 2 Milk, cheese, yoghurt & cereals	Term 3 Soya, Beans, Nuts, Seeds, Butter, Oil, Sugar and Syrups
Year 11 **3D Design**	Term 1 GCSE Coursework – Completion of year 10 term 3.	Term 2 GCSE practical examination preparation. Coursework and manufacture preparation for 10 hour timed practical examination.	Term 3 GCSE 10 hour timed practical examination.
Year 11 **Food Preparation & Nutrition**	Term 1 Non Examined Assessment 1	Term 2 Non Examined Assessment 2	Term 3 Revision using food revision guide and workbooks

Year 7: 2 hours per week, termly rotation

Yr 7 Traditional Woodwork: Lego Box Project – Wooden storage box in shape of Lego brick.
Key Skills:

- Introduction to analysis of brief & designing/manufacturing for a client's needs.
- Research existing solutions and annotate simply.
- Analysis of commonly used materials – being able to select the correct material for based on material properties & requirements of the brief.
- Introduction to accurate measuring & marking out skills – core equipment needed (pencil, ruler, try-square)
- Health & Safety – workshop H&S rules, with continual reinforcement & introduction of more detailed H&S rules when new equipment encountered.
- Correct use of basic hand tools – cutting all component parts from an individual length of pine, cutting rebate joints. Use of marking out equipment, tenon saw, accuracy of joint marking etc.
- Attention to detail with joinery – ensuring joints are correctly cut & sanded prior to assembly to provide a 90 degree corner joint.
- Use of basic adhesives – introduction to correct use of PVA glue for main box joints (teacher to use impact adhesive for inner/outer lid attachment but explain how it works to students)
- Precision with scroll saw – cutting base, outer & inner lid panels from MDF using scroll saws.
- Permanent fixings – correct use of hammer & panel pins to attach base.
- Dowel joints for affixing lid discs – intro to use of pillar drills for precision hole drilling in lids. Dowel & PVA to be used to affix lid discs.
- Finishing skills – correctly sanding (with grain etc) to ensure a fine finish on the wooden components. Priming & painting of lids to chosen colour.

Yr 7 Product Design / Graphics: The Clock Project – Acrylic layered analogue clock.
Key Skills:

- Introduction to analysis of brief & designing/manufacturing for a client's needs.
- Research existing solutions and annotate simply.
- Analysis of acrylic and other plastic materials, research into their properties demonstrating understanding of thermo and thermosetting categories and environmental impact.
- Skills and techniques for drawing enhancement and developing innovative design ideas.
- Introduction to accurate measuring & drawing out skills using CAD 2D Design.
- Introduction to CAM laser cutter quality control.
- Health & Safety – workshop H&S rules, with continual reinforcement & introduction of more detailed H&S rules when new equipment encountered.
- Attention to detail with component assembly – using CADCAM as a basis for accuracy but understanding that individual practical skills are essential for quality product outcome.
- Use of basic adhesives – understanding the difference between adhesives and how to join plastics in particular.
- Evaluation skills – self reflection, product evaluation, customer/client feedback, the importance of resilience.

Yr 7 Food Preparation and Nutrition: Basic key practical skills and an understanding of food hygiene and safety, nutrition and food waste
Key Skills

- Introduction to knife skills
- Identifying Hazards in a kitchen
- Identifying safety rules in a kitchen
- Knowing the name of kitchen equipment and what it's used for
- Practical: Apple crumble – Bridge and claw technique, rubbing in method
- Understanding the 4Cs for Good Food Hygiene – cleaning, cross-contamination, cooking (75C in centre) and chilling (1 to 4C.)
- Understanding how to use the Cooker. – Parts of the cooker. What the grill and hob are used for? Safety when using the cooker.
- Practical: Scones – rubbing in method, shaping, cutting and safe use of cooker
- Understanding the importance of eating breakfast – energy, Vit B and calcium intake.
- List healthy and unhealthy breakfast foods. Identify problems with some breakfast cereals high in sugar intake which leads to *obesity* and dental cavities.

- Practical: Breakfast muffin – wet into dry mixtures, practical timings
- Introduce the Eatwell Plate linked to balanced diet
- Practical: Scone based pizza – rubbing in, rolling and shaping. Bridge and claw technique
- Introduce methods of cooking. Effects of cooking methods on food e.g. nutrient loss. Best ways to cook food to retain flavour and nutrients
- Practical: Vegetable Cous Cous – Knife skills consistency of size for equal cooking. Safe use of hob
- Introduce how we shop for food. Use of a budget when shopping for food. Discuss how to judge what to spend
- Practical: Pasta Splodge – Knife skills – using a pre made sauce (soup) to help create a simple balanced meal
- Introduce Sensory Analysis – how we can use it to analyse and improve food – star diagram
- Practical: Oat and raisin cookies – Creaming method, safe use of oven
- Practical: Challenge lesson – Team work exercise to produce shortbread to a specification – Timed challenge
- Introduce short design challenge: Design and make a rice, pasta or Cous Cous salad suitable for your family Mood board, client requirements
- Practical: Bread rolls – Kneading, shaping and proving
- Design task – recipe creation, list of ingredients
- Practical: Making salad design – Knife skills and presentation
- Introduction to issue of Waste food. Causes and prevention
- Practical: Spiced apple pudding – Knife skills, creaming method
- Unit test
- Practical: Bolognese – Knife skills, use of hob and seasoning

Year 8: 2 hours per week, termly rotation

Yr 8 Traditional Woodwork: Mono Speaker Project – Mixed materials speaker box and introduction to soldering electronics.
Key Skills:

- Further analysis of brief – more detailed analysis of brief, identifying client requirements more independently & suggesting outcomes.
- Introduction to ACCESSFM specifications – basic specification produced to suit client needs.
- Research existing solutions – research & annotate a variety of existing solutions that meet some aspects of the brief.
    - *Electronics*
- Understand function of basic electronic components – uses, standard symbols etc.
- Introduction to soldering – paired practice work on project board & surplus components
- Soldering of speaker kits – continued paired work to assemble speaker kits. Class to work together, assisting each other, & pairs responsible for quality control of speakers.
    - *Joinery*
- Revisit marking out equipment & core skills from yr7
- Introduce students to finger joints – mark out timber, cut all panels from one piece & cut joints using tenon saws & fret saws.
- Assemble box sides & glue using PVA.
- Attach base using hammer & panel pins
- Introduce use of screws for attaching lid – pilot holes, countersinking, selecting the correct screw for the job.
- Move onto computers to create personalised front grilles on 2D Design – students to modify pre-existing templates for front grilles with their own choice of design. Grilles forwarded to teacher to be batch-cut.
- Grilles attached to speaker with impact adhesive.
- Grille attached to front of box using screws.
- Finishing of box – sanding using various grades of abrasive paper.

Yr 8 Product Design / Graphics: The Game Board Project – Design & make a snakes and ladders inspired unique board game.
Key Skills:

- Introduction to 'graphics design' from paper to CAD using Serif DrawPlus
- Introduction to analysis of brief & designing/manufacturing for a client's needs.
- Research existing board game graphics (logo/corporate identity) solutions and annotate demonstrating an understanding of graphical impact.
- Analysis of card nets and understanding of assembly using scored lines.
- Skills and techniques for drawing enhancement and developing innovative design ideas.
- Mastery repetition of accurate measuring & drawing out skills using CAD 2D Design.
- Mastery repetition of CAM laser cutter quality control.
- Health & Safety – using craft knives, cutting mats, metal rulers and hot glue gun.
- Attention to detail with component assembly – using CADCAM as a basis for accuracy but practising individual crafting skills are essential for quality product outcome.
- Use of basic adhesives – understanding the advantages of hot glue for this topic.
- Evaluation skills – self reflection, product evaluation, customer/client feedback, the importance of resilience

Yr 8 Food Preparation and Nutrition: key 'bread making' practical skills and simple meals. Dietary needs and food provenance.
Key Skills:

- Introduction to Staple foods characteristic, use in the diet
- Practical: Bread rolls – Mixing, kneading, shaping and proving technique recap safe oven use
- Focus on Wheat as staple food. Production, uses commercial and domestic
- Practical: Shaped and flavoured bread –use of flavourings to enhance bread
- Labelling of the Wheat grain and recognising different flour types and uses in cooking
- Practical: Bread based pizza – Recap bridge and claw technique – consistent cutting
- Identify different components of bread. Functions and property of each ingredient
- Practical: Soda bread – Alternative raising agents to yeast, characteristics compared to yeast
- Building on knowledge of sensory testing and comparisons. Tasting three different breads
- Practical: Chelsea buns – Enriched yeast dough and shaping techniques

- Practical: Challenge lesson – Team work exercise to produce pasta from scratch to a specification – Timed challenge
- Research how pasta is produced commercially
- Practical: Pasta bake – Creaming method, safe use of oven
- Literacy based lesson, use of adjectives and adverbs to enhance a menu
- Practical: Stir Fry – Focus on efficient and consistent preparation of ingredients. Safety using high temperatures on hob. Healthier method of cooking to retain nutrients
- Recap nutrition from y7. Discuss health issues caused by poor nutrition e.g. obesity. Prevention
- Practical: Chicken/Mushroom risotto – Simmering and sauce reduction. Uses of rice
- Energy balance and Importance of hydration
- Practical: Filled pitta bread – Filling containing three vegetables a protein and sauce
- Introduce seasonal foods – advantages and disadvantages
- Practical: Rhubarb/Apple Streusal – Uses of puff pastry – rolling and shaping
- Introduce the idea of local food – definition, advantages and disadvantages. Food produced in the locality of Ledbury
- Practical: Toad in the hole – Challenge to use as many local ingredients as possible
- Introduce Organic food, Definition, advantages and disadvantages
- Practical: Chicken curry – knife skills and seasoning
- Unit test based on work in year 8

Yr 9 3D Design (OCR GCSE Art & Design) 2 or 3 hours per week

This academic year is broken down into 3 termly projects, focussing on a variety of theory and practical skills. These are mastery skills revisited from KS3 with enhanced elements and accuracy applied to a higher level. Key subject specific terminology is explored and embedded to enrich the vocabulary connected to each termly specialism.

Term 1 - Graphics design and manufacture: Point of Sale Unit and Corporate Identity - Design and make a flat-pack point of sale unit complete graphic branding for a chocolate bar.

Key Skills:

- Introduction to point of sale units and promotional purpose.
- Introduction to analysis of brief & designing/manufacturing for a client's needs and wider target market.
- Research existing chocolate promotional solutions, how point of sale units are used (position marketing) and annotate using key subject specific language.
- ACCESSFM specification target setting for clear project direction.
- Analysis of foamboard, its reinforced properties and CAM laser cutter settings.
- Analysis of card nets and understanding of assembly using a slot method.
- Isometric perspective drawing skills and developing innovative design ideas.
- Mastery repetition of accurate measuring & drawing out skills using CAD 2D Design.
- Mastery repetition of CAM laser cutter quality control.
- Health & Safety – using craft knives, cutting mats, metal rulers, hot glue and spray adhesive.
- Attention to detail with component assembly – using CADCAM as a basis for accuracy but practising individual crafting skills are essential for quality product outcome.
- Evaluation skills – using original ACCESSFM specification targets for self reflection and product evaluation, customer/client feedback, the importance of resilience.

Term 2 - Product design and electronics: Moodlamp Project – Design and manufacture the housing for an LED and LDR moodlight circuit board kit, and solder the electronic components for a working product.

Key Skills:

- Further analysis of brief – detailed analysis of brief, identifying client requirements more independently & suggesting outcomes.
- ACCESSFM specification targets – more detailed specification produced with clear target market consideration.
- Research existing solutions – research & annotate a variety of existing solutions demonstrating design awareness and identifies areas for development.
- Innovative design – Creates a combination of innovative hand drawn initial design ideas and CAD visuals to present work in a creative and graphically accurate style.
- Development – Gathers target market feedback and develops / improves / amends design ideas accordingly.
    - *Electronics*
- Understand function of all moodlamp electronic components – uses, standard symbols etc.
- Mastery repetition of soldering – paired practice work on project board & surplus components
- Soldering of moodlamps – continued paired work to assemble moodlamp kits. Class to work together, assisting each other, & pairs responsible for quality control of speakers.
    - *CADCAM and assembly*
- CAD - Revisit key measuring tools using 2D Design. Prepare a 3D isometric visual of final design. Create all CAD moodlamp sections with box joinery technique used appropriate for chosen material.
- Production plan – mastery consolidation; independent decision making on most appropriate assembly and finishing of moodlamp detailed in a stage by stage production plan.
- Assemble CAM sections in order with clear access to the circuit board using production plan guidance.
- Evaluation skills – using original ACCESSFM specification targets for self reflection and product evaluation, target market feedback, the importance of resilience.

Term 3 - Traditional wood work & CADCAM skills: Small Storage Box – Design and manufacture a small storage box for a client of their choosing.

Key Skills:

- In-depth analysis of brief & designing/manufacturing for chosen client's needs.

- Research existing solutions and annotating demonstrating higher level vocabulary and design awareness.
- Research and analysis of possible material choices and justification for appropriate properties.
- ACCESSFM specification targets – detailed specification produced with clear client wants/needs.
- Innovative design – Creates a combination of innovative hand drawn initial design ideas and CAD visuals to present work in a creative and graphically accurate style.
- Development – Gathers client feedback and develops / improves / amends design ideas accordingly.
- CADCAM – creates final visual and any appropriate sections for CAM using 2D Design
- Production plan – mastery consolidation; independent decision making on most appropriate assembly and finishing of small storage box detailed in a stage by stage production plan.
- Independent workshop practical skills - combine traditional woodwork and CAM sections using production plan guidance.
- Health & Safety – workshop H&S rules, with continual reinforcement & detailed H&S rules when new equipment encountered.
- Reinforce correct use of hand tools and machinery – cutting all component parts accurately, use of marking out equipment, tenon saw, accuracy of joint marking etc.
- Attention to detail with joinery – ensuring joints are correctly cut & sanded prior to assembly.
- Evaluation skills – using original ACCESSFM specification targets for self reflection and product evaluation, target market feedback, the importance of resilience.

Yr 9 Food Preparation and Nutrition (WJEC GCSE) 2 or 3 hours per week

Term 1 - **Food production & functions of ingredients**

Key Skills:

Shortcrust pastry making, bread techniques, flavour and seasoning, temperature control, fatless sponge making, decoration and presentation

Key Knowledge:

Egg production methods, food poisoning, sensory testing, sugar production

Term 2 - **Nutrition, sensory testing & hospitality industry**

Key Skills:

Time management, choux pastry making, nutrients, sensory evaluation, puff pastry making, sweet pastry making, fish preparation

Key Knowledge:

Dietary needs, hierarchy of hospitality industry, jobs within industry, the role of a chef, puff pastry making, sweet pastry making, fish preparation

Term 3 - **Food service, exam preparation, menu design & packaging**

Chutney making, hot water crust making, shaping and finishing techniques, canape making, food service, egg base dishes

Key Knowledge:

Food sustainability, exam preparation, exam, event planning, menu design, event planning, food packaging

Yr 10 3D Design (OCR GCSE Art & Design) 2 or 3 hours per week

This academic year revisits and masters year 9's theory and practical skills, as well as investigating new and higher level designing and manufacturing skills. This academic year transitions into the independent final coursework project which is completed during term 1 of year 11.

Term 1 - Product design and electronics - Stereo Speaker Project – Design and manufacture mixed materials speaker box and higher level soldering electronics.
Key Skills:

- Building on independence and resilience, mastery skills from previous years and projects, (see above DT projects) students work through the structured design process they are used to, to design and manufacture a stereo speaker.
- Paired soldering task with reinforced H&S.
- Card modelling and prototyping before reaching a final outcome solution.
- Developing and evaluating throughout the manufacture stages.

Term 2 - Product design and graphics: Products inspired by 20th century design - An independent exploration project:
Key Skills:

- Using a 'design context' rather than a 'brief' to explore possible solutions and independently arrive at a product decision.
- Building on independence and resilience, mastery skills from previous years and projects, (see above DT projects) students work through the structured design process they are used to, to arrive at a product of their choosing to design and manufacture.
- Any form of previously learnt manufacturing technique could be revisited here. New forms of manufacture could also be explored with teacher-led instruction and safety.
- Card modelling and prototyping before reaching a final outcome solution.
- Developing and evaluating throughout the manufacture stages.
- Receiving and analysing feedback, presented in data format and written evaluation.

Term 3 - GCSE Coursework/Portfolio (NEA) 60%
Term 3 of year 10 consolidates all learning to date. Students independently explore, research, design and manufacture a product. The portfolio showcases both practical work and their personnel response to either a centre, or learner set starting point, brief, scenario or stimulus. The project continues into year 11 and is worth 60% of the overall GCSE in 3D Design.
Key Skills:
The portfolio is broken down into 4 assessment objectives;

- AO1 – Develop ideas through investigations, demonstrating critical understanding of sources.
- AO2 – Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.
- AO3 – Record ideas, observations and insights relevant to intentions as work progresses.
- AO4 – Present a personnel and meaningful response that realises intentions and demonstrates understanding of visual language.

Yr 10 Food Preparation and Nutrition (WJEC GCSE) 2 or 3 hours per week

Term 1 - Fruit, vegetables, meat, fish, poultry & eggs
Key skills:
Different knife cuts, pastry; preparation and finishing, cake making, butchery techniques, game preparation, fish filleting
Key Knowledge:
Classification, provenance and growing, processing and food science, preservation and storage, vitamins and minerals, cuts of meat, cooking methods, welfare and quality, fishing methods, egg production.

Term 2 - Milk, cheese, yoghurt & cereals
Key Skills:
Choux pastry, finishing and decoration, practical planning, bread preparation, danish pastry preparation
Key Knowledge:

Milk and cream production, protein, yoghurt production, cheese production, managing high risk foods, cereal classification, wheat production and processing, bread production, rice production, breakfast cereals.

Term 3 - **Soya, beans, nuts, seeds, butter, oil, sugar and syrups**

Key Skills:

Food investigations, cooking with pulses, cooking with meat analogues, exam prep, sponge preparation, cooking with different fats and oils

Key Knowledge:

Meat analogues, soya and tofu production and uses, myco protein, beans, pulses, nuts and seeds production and uses. the 14 key allergens, butter production, oil processing, fats and oils, sugar production and alternatives, carbohydrates, diabetes and dental cavities, Syrup production.

Yr 11 3D Design (OCR GCSE Art & Design) 2 hours per week

Term 1 – **Completion of GCSE Coursework/ Portfolio (NEA)**
Started in term 3 of year 10, completion of Portfolio by December, Christmas end-of-term holiday.
Key Skills:
The portfolio is broken down into 4 assessment objectives;

- AO1 – Develop ideas through investigations, demonstrating critical understanding of sources.
- AO2 – Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.
- AO3 – Record ideas, observations and insights relevant to intentions as work progresses.
- AO4 – Present a personnel and meaningful response that realises intentions and demonstrates understanding of visual language.

Term 2 – **GCSE Examination Preparation Coursework of Externally Set Task (40%)**
Following the same methodology and assessment objectives as the above portfolio, students are to explore, research and design a product inspired by a design context set by the exam board OCR. Students should use this term to create their project and manufacture some components ready for assembly. Students will use this project to demonstrate their creative thinking skills and level of practical skill for the timed practical examination detailed below.

Term 3 – **Completion of GCSE Examination Preparation Coursework and Timed Practical Examination**
Students will demonstrate their practical skills during a timed workshop manufacture of the above product. They may use any appropriate materials of choice and manufacturing techniques in order to demonstrate their learning throughout the course and level of practical and creative ability.

Yr 11 Food Preparation and Nutrition (WJEC GCSE) 2 hours per week

Term 1 - **Non Examined Assessment 1**
Key Skills/Key Knowledge:
1 Select task - Plan of action, 2 Initial research, 3 Hypothesis, 4 Plan investigations, 5 Investigation 1, 6 Analysis of results, 7 Further actions, 8 Plan investigation 2, 9 Investigation 2, 10 Analysis of results, 11 Conclusion, 12 Further developments

Term 2 - **Non Examined Assessment 2**
Key Skills/Key Knowledge:
1 Select task - Plan of action, 2 Research, 3 Survey/Questionnaire, 4 Skills table, 5 Sensory analysis, 6 Possible ideas, 7 Trials and evaluations, 8 Final dishes with reasons, 9 Three point time plan, 10 Food practical exam, 11 Evaluation, 12 Further developments

Term 3 - **Revision using food revision guide and workbooks**
Key Skills/Key knowledge:
Revision techniques, GCSE Food exam

Assessment

KS3 (DT); students have an annual written assessment which comprises design work and subject knowledge. At the end of each rotation, project work is marked with assessment focusing on target-setting for the following project.

KS3 (Food); students have a written examination at the end of each rotation. This consolidates the practical and theory work covered.

KS4 (3D Design); The current GCSE 3D Design course (J175) is split into 2 assessed components a) 60% design and make portfolio b) 40% design and make externally set task. Knowledge and understanding is developed throughout the course.

KS4 (Food); This GCSE course is broken down into 2 units; unit 1 is 'Principles of Food and Nutrition' which is assessed via a 40% written examination. Unit 2 is 'Food and Nutrition in Action' this is internally assessed and externally moderated, 50%

Support for student groups

In both DT and Food, PP students are supported through careful seating, targeted questioning, and guidance with class work and homework. Catch-up/booster after-school sessions are offered throughout the school year, with key students targeted. In Food, ingredients are provided for students where this is required.

Homework

Homework in all Year groups is primarily aimed at consolidating work started in class, and also to enable research and preparation, including materials and ingredients.