

Food Technology theory overview

Much of the theory work you will learn can be directly related to your major project so that your learning is reinforced as the project proceeds. The foundation for theory at A2 is AS Food Technology, so revise your notes and exam questions on what you learned previously and build on this knowledge.

1. Human responsibility

This section is about acquiring knowledge needed to support you, as a designer, with social, moral, ethical and legal responsibilities. It allows you to explore environmental and consumer factors which impact designers and which might affect the final food product.

First you will learn about service to the consumer and the legislative framework

We then move on to technical, aesthetic, social and moral issues as below:

Commercial procedures for ensuring safe food production	Red	Amber	Green
The 1990 Food Safety Act			
General Food Hygiene Regulations 1995			
European Union Food Hygiene Directive 93/94EEC			
Legal requirements regarding food labelling			
Consumer choice and preference in relation to each of the following topics:			
Special dietary needs			
Fair trade			
Organic			
Animal welfare			
Green revolution			
Recycling			
Domestic and industrial disposal of waste			
Food miles			
Genetically modified foods			
Growth promoters			
Use of antibiotics			
Quorn			
Factory farming			
BSE			
Change of employment pattern, loss of culinary skills			
Cost, packaging, advertising, marketing			

Fortified foods, probiotic, nutraceutical foods			
The effect of Product Life Cycles			
Manufacturing and the environment			
The need to find new, novel and authentic food products to satisfy consumer demand and maintain market sales			

The next section is about the forms of energy used by industry, its impact on design and manufacturing and environmental impact.

Considering the cost and type of energy, the effect on the final product and product quality			
The efficient use of energy in manufacturing			
Green/environmental issues in industry			
Sustainability issues influencing the future and resource management			
Energy conservation including recycling issues			
Considering environmentally friendly manufacture, food production , transport and retailing			
Knowing the needs of customers eg young children, the elderly, coeliac, diabetic			
Using qualitative tests with statistical data eg nutritional analysis, colour charts, sensory analysis			
Specifications which will judge quality			
Quality assurance procedures. Scales of production. Designated tolerances and quality control standards			
Consider socio-economic, cultural and ethical factors involved in food choice, availability and distribution			

The next section of study is about product design and its place in the market for example how a design idea is transformed into a marketable food product. This is where your project really comes into its own and you can directly relate exam answers to the type of work you have been doing throughout the year. It is about producing reliable and quantifiable information after you have given a detailed lifestyle profile of your target market. It will examine the factors

which influence product design eg market pull technology push, the 4 P's, market research techniques to name but a few. Again, you will have a lot of this information in your major project.

	Red	Amber	Green
Product development in relation to the consumer, dietary and health issues, obesity concerns, cultural trends and differences			
The impact of new materials, processing equipment			
Extension of new product lines as a result of foreign travel/revived interest in regional/historic foods			
Industry advances eg extrusion			
Technology push and market pull			
Revitalisation of foods eg Smarties			
How market research is conducted and marketing strategies			
The market environment, who buys, lifestyle changes, socio economic, target audience and market research methods			
Selling the product and the 4 P's: Product life cycle, Price, and how it is determined, Place, and how products are distributed, Promotion, considering different ways products are presented to their market			
The importance of brands, logos, trade names and corporate identity			
Factors which influence the success of products eg customers purchasing decisions, market penetration			
Packaging design - the development of packaging as a direct marketing tool eg tetra pak, tubular crisps			
Consumers led demands eg tamperproof packaging, smart codes, environmentally friendly packaging			
Layout of retail outlets - retail psychology and pressure			
Methods of retailing - internet ordering, cable TV			

This section is about learning detailed knowledge of a broad range of processes used in food manufacturing. This will mainly be answered through essay questions.

Preserving food - using high and low temperatures, removing moisture, change of PH, control of oxygen			
Chilling, freezing, freeze drying, canning, pasteurisation, dehydration, irradiation, UHT, sterilisation. The effect of heat on the physical, sensory and nutritional properties of food			
Chemicals - how to prolong shelf life and preserve food eg antioxidants, preservatives, emulsifiers and their function in foods			
The advantages and disadvantages of additives			
The materials used in food packaging related to shelf life eg MAP			
Biological - the role of enzymes/yeast/microorganisms in food products eg cheese, yoghurt, bread			
The classifications of bacteria, yeasts, pathogens, moulds and factors that affect growth and control			
Food poisoning, control of salmonella, Staphylococcus, E coli, Clostridium			
Cross contamination			

The final section refers to Production systems and control particularly related to industry.

Management systems for production: CAMM/CAD/CIM/gannt chart/timeline/flowchart			
Controlling systems eg sensors, gauges, microbiological tests. The use of CAM eg for control of time/heat/weight/stock rotation/reordering			
Systems to assist quality assurance QA-ISO-9000 and quality control systems for safer food production			
ARP = automatic replenishment packaging			
Characteristics of a system = Input, Process, Output			
The differences between open and closed systems			
Control of weight, rate of flow of food materials, temperature, pressure, formulation, recipe, equipment, time processing, storage, staff skill			

Use of systems diagrams and schematic layouts showing human and electronic feedback within industry			
The use of ICT in industry- for research, investigation, nutritional handling, modelling, prediction, imaging, creating designs, planning, organisation, safety, hygiene, quality and processes, monitoring, stock control, distribution, marketing			
Use of Computer Aided Design = CAD, Computer Aided Manufacture = CAM, Computer Integrated Manufacture = CIM, Computer Aided Administration = CAA, Production Planning Control = CPC, JIT = Just in time manufacture			
CAA =Computer Aided Administration = personnel, sales, marketing, order processing, stock control, costing, accounting			
Using ICT for planning and data handling			
Using ICT for communicating, modelling, controlling and manufacturing			
Using a system to make plans which identify the resources needed and set realistic deadlines			
Model detailed aspects of ideas and use a systems approach to solve problems			
Use ICT to evaluate, cost, communicate and present proposals			