

KS4 Unit Operations

Learning Objectives	Teaching activities	Learning outcomes	Points to note
<p>Students should learn:</p> <p>Designing skills</p> <ul style="list-style-type: none"> research and use information about food processing and unit operations explore and develop ideas by modelling, testing and trialling plan and manage food production and systems <p>Making skills</p> <ul style="list-style-type: none"> select materials and processing techniques appropriately take account of working characteristics of materials test and evaluate systems in use take into account safety issues during food handling <p>Knowledge and understanding</p> <ul style="list-style-type: none"> develop and use knowledge about unit operations and processing techniques understand how nutrients may be affected by processing recognise hazards and take action to manage and control them during food handling understand the principles underpinning extending shelf-life <p>Formative assessment</p> <p>Students should be assessed during the unit of work against the above learning objectives. A simple scale may be used to keep track of students' progress:</p> <p>3 excellent understanding, making outstanding progress in this aspect</p> <p>2 reasonable understanding, making good progress in this aspect</p> <p>1 very little understanding in this aspect, experiencing some difficulties, some progress</p>	<p>This is an exploratory unit of work about unit operations and food processing. You will develop your knowledge and skills through a range of practical tasks.</p> <ul style="list-style-type: none"> Explore via video, CD-ROM or Internet how raw materials are processed into food products by manufacturing systems and produce systems diagrams. Good ones to start with are fish fingers, ready meals, cakes, biscuits, bread, ice cream, cheese, yogurt, pasta. Systems can be broken down into smaller unit operations. In a team, plan, organise and carry out the unit operations to make: a chilled product, a dessert or a pastry product. Include the necessary quality and safety checks to show how the unit operations would be controlled. In a group of 4, research the different ways in which foods may be shaped or formed into products, egs. burgers, pasties, samosas, fish fingers, extruded pasta and try out some of these techniques. Make one product that may be processed in each of the following ways: freezing, drying (egs. soup, pot noodle), cook-chill (eg. a ready-meal), fermentation (egs. cheese, yogurt), heating (egs. pasteurised milk or soup). Trace the unit operations involved for each in a flow diagram. Produce a table to show how the nutrients in each of the products you made are affected by different food processes. Explain, with examples, how heat transfer, water activity, pH and irradiation can be used to extend the shelf-life of food products. 	<p>Summative assessment</p> <p>Overall, students should make progress in relation to the learning objectives planned for the unit. The formative assessment records (see column 1) should indicate which of the following three levels of expectation students will achieve. This can be checked at the end of the unit and feedback given to students.</p> <p>End of unit expectations</p> <p>Most students will:</p> <ul style="list-style-type: none"> have used a good range of processing and simulation techniques appropriately have shown a broad knowledge of food processing and production, quality control and its management have demonstrated a thorough understanding of food processing and production when handling and using food <p>Some pupils will not have made as much progress and will:</p> <ul style="list-style-type: none"> have used a narrow range of processing and simulation techniques appropriately have shown some knowledge of food processing and production, quality control and its management have demonstrated a basic understanding of food processing and production techniques when handling and using food <p>Some students will have progressed further and will:</p> <ul style="list-style-type: none"> have used a wide range of processing and simulation techniques appropriately have shown an extensive knowledge of food processing and production, quality control and its management have demonstrated and applied a thorough understanding of food processing and production techniques with food 	<p>Key skills</p> <p>ICT</p> <ul style="list-style-type: none"> role of ICT in industrial practices monitoring and controlling researching using CD-ROM and Internet data handling and analysis CAD and CAM <p>Problem solving</p> <ul style="list-style-type: none"> trailing and prototyping simulating production systems considering production and systems issues <p>Managing own learning</p> <ul style="list-style-type: none"> time and resource management self assessment and review <p>Collaborative working</p> <ul style="list-style-type: none"> working as a team sharing information and ideas presentation <p>Communication</p> <ul style="list-style-type: none"> email group discussion report writing presentation <p>Citizenship</p> <ul style="list-style-type: none"> being an informed consumer participating and collaborating with others making decisions and justifying actions <p>Resources</p> <p>RCA 'Routes: Food', Hodder & Stoughton, Collins, 'Real World D&T: Food Technology'</p> <p>BNF 'Food Technology' boxed resources</p> <p>Classroom videos 'Mass production of Food'</p> <p>DATA's 'Behind the Scenes' CD-ROM</p> <p>BNF's 'Interactive Food Facts' CD-ROM</p> <p>Economatic's 'HACCP' CD-ROM</p> <p>www.foodforum.org.uk</p> <p>www.foodtech.org.uk</p> <p>www.sainsburys.co.uk/tasteofsuccess</p>