

Scheme of learning:

A2 Food Technology

Unit 3 - Further study of food materials products and processing

Topic	Learning Objectives/ outcomes	Teaching/ Learning activities	Assessment for learning	PLTS/SfS Other opportunities
<b>Cereals</b>	<ul style="list-style-type: none"> <li>- The importance of cereals in the diet</li> <li>- the structure of the wheat grain, endosperm, germ and bran</li> <li>- Chemical composition of the grain</li> <li>- Flour is obtained through the milling process.</li> </ul>	<ul style="list-style-type: none"> <li>- Discuss the role of cereals in diet.</li> <li>Sketch and label the structure of a typical cereal grain.</li> <li>Research how wheat is milled into flour</li> </ul>	Sketch and label the structure of a typical cereal grain. Research how wheat is milled into flour	Independent enquirers <ul style="list-style-type: none"> <li>- Plan and carry out research appreciating the consequences of decisions</li> </ul>
<b>Cereals contd.</b>	<ul style="list-style-type: none"> <li>- The physical appearance and composition of cereal grains differ between wheat, rye and maize.</li> <li>- Barley is used to make malt.</li> <li>- Protein levels differ from grain to grain making them suitable for different products bread cake and pasta flours.</li> </ul>	Look at wheat maize and rye and discuss the differences. Look at other grains quinoa, spelt, gram, buckwheat millet. Research how is barley used to make malt and what industries use this? Explain the differences in flours used to make bread, cakes, pasta. What alternative grains can be used for people with gluten intolerances.	What alternative grains can be used for people with gluten intolerances  Find recipes to make products	Creative thinkers <ul style="list-style-type: none"> <li>- Try out new and alternative solutions and follow ideas through.</li> <li>- Ask questions to extend their thinking.</li> <li>- Adapt ideas as circumstances change</li> </ul>

<b>Cereals contd. (Double lesson)</b>	<b>FPT:</b> <ul style="list-style-type: none"> <li>- Bagels</li> <li>- Italian bread sticks</li> <li>- Functions of ingredients</li> </ul>	Make breads. Discuss the functions of ingredients in bread including extras. Discuss and carry out finishing techniques used in bread making. <ul style="list-style-type: none"> <li>- COMPLETE function of ingredient sheets.</li> <li>- Colour copies of finishing techniques.</li> </ul>	<ul style="list-style-type: none"> <li>- Explain how the use of strong flour has enabled the breads to rise without collapsing.</li> </ul>	Reflective Learners <ul style="list-style-type: none"> <li>- Review progress acting on the outcomes.</li> </ul> Team work - collaboration with others
<b>Cereals contd.</b>	Systems of bread making in industry. Straight dough system Chorleywood system	Demonstrate the difference between two systems. Answer question on the two systems. Proudlove p136 onwards. "Bite" virtual bakery DVD and question sheet.	Write flow charts "Bite" virtual bakery DVD and question sheet.	Effective participators <ul style="list-style-type: none"> <li>- Propose practical ways forward, breaking these down into manageable steps</li> </ul>
<b>Cereals contd.</b>	<ul style="list-style-type: none"> <li>- Changes that happen during the bread making process.</li> <li>- Cake biscuit and pastry making</li> <li>- Pasta making</li> </ul>	Product analysis Discuss the physical and chemical changes and the role of wheat proteins in baking. How to make successful cakes	Flow chart to explain how pasta is made.	Effective participators <ul style="list-style-type: none"> <li>- Discuss issues of concern, seeking resolution where needed.</li> <li>- Present a persuasive case for action</li> </ul>
<b>Cereals contd. Double</b>	<b>FPT: Own choice product using alternative grains</b> Sensory evaluation of products.	Make products Complete sensory evaluation charts on products. Discuss results	Complete sensory evaluation charts on products.	Team Work <ul style="list-style-type: none"> <li>- Reach agreement manage</li> </ul>

<b>Lesson</b>		Identify the characteristics that each grain give to the product. Recipe for next lesson	Discuss results	discussions to achieve results. - Provide constructive support and feedback to others.
<b>Cereals contd.</b>	Test on cereals	Test - Questions from previous exam papers.	Test - Questions from previous exam papers.	
<b>Cereals contd. Double lesson</b>	<b>FPT: Rough puff pastry tart</b>	Learn how to make rough puff pastry. Use arrowroot to make a glaze.	Evaluate product	Reflective learners - Assess themselves and others identifying opportunities and achievements.

<b>Meat &amp; Fish Proudlove 111 - 118</b>	<ul style="list-style-type: none"> <li>- Learn that muscle fibres are held in bundles by connective tissue.</li> <li>- Each fibre surrounded by sheath <i>sarcolemma</i>.</li> <li>- Each fibre is divided into <i>myofibrils</i> surrounded by fluid.</li> <li>- Myofibril made from two types of protein myosin and actin.</li> <li>- How muscle contracts.</li> <li>- ATP</li> </ul>	<p>Sketch and label the structure of muscle.</p> <p>Sketch to demonstrate how muscle contracts and what the roles of the proteins are.</p> <p>Take notes to understand how muscle contracts, with ATP providing energy.</p>	<p>Sketch and label the structure of muscle.</p>	<p>Reflective learning</p> <p>Communicate their learning in relevant ways for different audiences.</p>
<b>Meat &amp; Fish</b>	<ul style="list-style-type: none"> <li>- Changes that occur in meat after slaughter.</li> <li>- Conversion of muscle to meat</li> <li>- Storage and handling of meat.</li> </ul>	<p>Discuss the factors that can influence the quality of meat pre slaughter.</p> <p>Impact of rigor mortis on the quality of the meat.</p> <p>Explain how production of lactic acid causes pH of the muscle to fall. PH is important 5.6 to reduce the risk of microbial attack.</p>	<p>Discussion to check understanding</p>	<p>Creative thinkers</p> <p>Questions their own and others assumptions.</p>
<b>Meat &amp; Fish Double Lesson 114-115</b>	<p><b>FTP: Goulash - Using pressure cookers</b></p> <p>Changes occurring during cooking</p> <p>HACCP</p> <ul style="list-style-type: none"> <li>- Putrefaction of meat</li> </ul>	<p>FTP: Goulash - Using pressure cookers</p> <p>Changes occurring during cooking</p> <p>HACCP</p>	<p>Complete HACCP sheet</p>	<p>Self managers</p> <ul style="list-style-type: none"> <li>- Work towards goals showing initiative, commitment and</li> </ul>

				<p>perseverance</p> <ul style="list-style-type: none"> <li>- Organise time and resources, prioritising actions</li> <li>- Anticipate manage and take risks.</li> </ul>
<p><b>Meat &amp; Fish Proudlove 118-121</b></p>	<ul style="list-style-type: none"> <li>- Difference between meat and fish muscle structure .</li> <li>- Demersal fish, pelagic fish nutritional differences.</li> <li>- Preservation of fish – recap different methods</li> <li>- Methyl Cellulose in batter.</li> </ul>	<p><b>FTP – Batter deep fried fish</b>          Explain fish highly perishable deteriorates quickly.          Seasonality of fish          Ph of fish is 6.5,          trimethylamine which gives the distinct smell of bad fish.          Ammonia produced by bacteria adding to the smell.          Lipids are susceptible to oxidative rancidity          Interactive “Oceans” DVD          Discuss difference in fish production.</p>	<p>Complete exam questions to test knowledge</p>	<p>Self managers</p> <ul style="list-style-type: none"> <li>- Work towards goals showing initiative, commitment and perseverance</li> <li>- Organise time and resources, prioritising actions</li> <li>- Anticipate manage and take risks.</li> </ul>
<p><b>Dairy Products Proudlove 96 -97</b></p>	<ul style="list-style-type: none"> <li>- Composition of milk</li> <li>- Nutritional value of milk</li> <li>- Factors affecting nut. Values</li> <li>-</li> <li>- Milk processing</li> </ul>	<p>Explain how the composition of milk varies and the factors that can impact on the nutritive value.          Main proteins are caesins and whey.          Caesin composition – mixture of phosphoproteins.          Caesin exists dispersed in milk as <i>micelles</i>.</p>	<p>Research milk processing –          Explain HTST          Pasteurisation – compare</p>	<p>Reflective learners          Assess themselves and others identifying opportunities and achievements</p>

		Calcium reacts with casein on the application of enzyme rennin to make a curd for cheese making. The remaining proteins are collectively called whey proteins.	sterilisation and uperisation	
<b>Dairy Products Proudlove 98 105</b>	<ul style="list-style-type: none"> <li>- Homogenisation of milk</li> <li>- Separation of cream</li> </ul>	Explain the process of homogenisation, and the separation of cream process.		
<b>Dairy Products Proudlove 98 105</b>	Cheese making process	<p>Make curd cheese.  addition of a bacterial starter culture to lower the pH, followed by rennet to coagulate casein  Starter cultures can be attacked by bacteria, "phage attack" bacteriophage killing the lactic acid producing bact.  <b>Visit to Quikes</b></p>	Answer question sheet	<b>Visit to Quikes</b>
<b>Dairy Products Proudlove 106</b>	<b>FTP: Cheese soufflé</b> <ul style="list-style-type: none"> <li>- Ripening of cheese</li> <li>- bacterial decomposition of dairy products.</li> <li>- Mould growth on cheese</li> </ul>	<p>Make product  Enzymes moulds and bacteria play a part in ripening cheese.  Research how does cheese get its flavour ?</p>	Complete sheet on balanced meal.	<b>Self managers</b> <ul style="list-style-type: none"> <li>- Work towards goals showing initiative, commitment and perservice</li> <li>- Organise time and resources, prioritising actions</li> <li>- Anticipate manage and take risks.</li> </ul>

<b>Dairy Products Proudlove 101 - 107</b>	<ul style="list-style-type: none"> <li>- Butter making</li> <li>- Souring of milk.</li> <li>- Yoghurt making</li> </ul>	<ul style="list-style-type: none"> <li>- Make butter.</li> <li>- Explain milk becomes sour due to the action of lactic acid bacteria.</li> <li>- When a pH of 4.6 is reached the caesins separate as a curd and may be attacked by organisms release gas and bitter flavours.</li> <li>- Make butter</li> </ul>	Research how butter is made.	Reflective learners Assess themselves and others identifying opportunities and achievements
-------------------------------------------	-------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------	------------------------------------------------------------------------------------------------

<b>Fruit and Veg</b>  <b>Proudlove 126/127</b>	<ul style="list-style-type: none"> <li>- Composition of F&amp;V</li> <li>- Turgor pressure</li> <li>- Loss of water transpiration</li> <li>- Cell walls contain lignin</li> <li>- Nutritional value</li> </ul>	<ul style="list-style-type: none"> <li>- Respiratory patterns F&amp;V</li> <li>- Discuss the nutritional value and composition of fruit and veg.</li> </ul>	<ul style="list-style-type: none"> <li>- Sketch and label plant cell.</li> </ul>	
<b>Fruit and Veg</b>  <b>Proudlove 129 -130</b>	<ul style="list-style-type: none"> <li>- Climacteric and non climacteric fruit.</li> <li>- Ripening process compositional changes.</li> <li>-</li> </ul>	<p>The rate of respiration is indicative of the rapidity with which compositional changes are taking place. Climacteric fruit fleshy show a rapid increase in respiration after harvesting which leads to ripening of fruit.</p> <p>Non climacteric fruit ripen slowly</p> <p>Complete climacteric graph</p> <p>Ethylene gas</p>	<ul style="list-style-type: none"> <li>- Answer exam questions</li> </ul>	<p>enquirers</p> <p>Plan and carry out research appreciating the consequences of decisions</p>
<b>Fruit and Veg</b>  <b>Proudlove 131 -132</b>	<ul style="list-style-type: none"> <li>-</li> <li>- Critical temperature</li> <li>- Storage of different types of fruit and veg.</li> </ul>	<p><b>FTP: Veg pie water crust pastry</b></p> <p>Make product</p> <p>Explain critical temperature</p> <p>Research different methods of fruit and veg storage</p>	<ul style="list-style-type: none"> <li>- Complete critical temperature graph and label</li> </ul>	<p>Self managers</p> <ul style="list-style-type: none"> <li>- Work towards goals showing initiative, commitment and perserverence</li> <li>- Organise time and resources, prioritising actions</li> <li>- Anticipate manage and take risks.</li> </ul>
<b>Fruit and Veg</b>	<ul style="list-style-type: none"> <li>- rotting of fruit and veg</li> </ul>	<p><b>FTP: Apple charlotte</b></p> <p>While growing, crops can be attacked by virus,</p>	<ul style="list-style-type: none"> <li>- Answer exam questions</li> </ul>	<p>Reflective learners</p> <p>Assess themselves</p>

Proudlove 131 -132		bacteria and fungi. Post harvest fruit and veg rot, attacked by bacteria and moulds.		and others identifying opportunities and achievements
Selection materials Proudlove 13,14 80,81	<ul style="list-style-type: none"> <li>- How create a texture using thickening agents</li> <li>- <b>Starch</b> and its used as a food additive</li> </ul>	<p>Gelatinisation of starch. Modification of starch Analysis of product id. The additives and why they are used. <b>Make two sauces using plain flour ,and modified flour.</b> Choc Custard Addition to sauces will prevent liquid entering pastry</p>	<p>Compare products after storage.  Analysis of product id. The additives and why they are used.</p>	<p>enquirers  Plan and carry out research appreciating the consequences of decisions</p>
Selection materials Proudlove 18, 82,83,84	<ul style="list-style-type: none"> <li>- How create a texture using thickening agents</li> <li>- <b>Gums</b></li> </ul>	<p>Uses of gums including alginates, pectin, cellulose and xanthan. How they work, which products they are used in, what they do. Thixotropic <b>FTP:Make carageenan Jelly</b> Interction between gums Addition to sauces will prevent liquid entering pastry</p>	<p>Answer exam questions</p>	<p>Effective paricipators - act as advocate for views that may not be their own. Support conclusions using reasoned arguments</p>
Selection materials Proudlove	<ul style="list-style-type: none"> <li>- Use of <b>celluloses</b> in food production.</li> <li>- Acidity control</li> </ul>	<p>Methyl cellulose and its applications. Acidity control and how they are used. Alginates added to batter to reduce moisture</p>	<p>Product analysis</p>	<p>enquirers  Plan and carry out</p>

18,82,83,84,85		absorption.		research appreciating the consequences of decisions
<b>Selection materials Proudlove 82-83 85-88 Double lesson</b>	<ul style="list-style-type: none"> <li>- Thicken a product quickly/ slowly</li> <li>- achieve rapid heat penetration by delaying the thickening of canned products</li> <li>- prevent growth of large ice crystals</li> <li>- Loss of viscosity due to agitation (Thixotropic)</li> <li>- Obtain rapid flavour release in the mouth.</li> </ul>	<p><b>FTP: Make arrowroot glaze for fruit flan</b>  Using phosphate cross bonded starches, rapid heat penetration can be achieved by slowing down the rate of starch gelatinisation due to the increased temp at which gelatinisation starts.  Add alginates to ice cream to retard ice crystal growth.  Xanthan gum only is thixotropic  Rapid flavour is released when thickeners are broken down Xanthan gum</p>	Product analysis	<p>Self managers</p> <ul style="list-style-type: none"> <li>- Work towards goals showing initiative, commitment and persistence</li> <li>- Organise time and resources, prioritising actions</li> <li>- Anticipate manage and take risks.</li> </ul> <p>enquirers</p> <p>Plan and carry out research appreciating the consequences of decisions</p>
<b>Nutrition</b>	<ul style="list-style-type: none"> <li>- Introduction to nutrition</li> <li>- Energy</li> </ul>	<p>Discuss and present  What is energy  Where does it come from  Why is it needed  How is it measured  How is it stored in the body</p>		<p>Effective participants</p> <ul style="list-style-type: none"> <li>- act as advocate for views that may not be their own.</li> </ul> <p>Support conclusions</p>

				using reasoned arguments
<b>Nutrition</b>	<b>Carbohydrates</b> FTP:	Discuss and present What are carbs? What foods are they in? How do they contribute to energy levels in the diet? Impact on body if you have too much or too little		Effective participants - act as advocate for views that may not be their own. Support conclusions using reasoned arguments
<b>Nutrition</b> <b>53-61</b>	Protein	<b>FTP: Adapt a cheesecake - make a low calorie cheesecake</b> Discuss and present What are proteins? What foods are they in? How do they contribute to energy levels in the diet? Impact on body if you have too much or too little. Nutritional requirements		Effective participants - act as advocate for views that may not be their own. Support conclusions using reasoned arguments
<b>Nutrition</b> <b>53 61</b>	Fats	Discuss and present What are fats? What foods are they in? How do they contribute to energy levels in the diet? Impact on body if you have too much or too little Nutritional requirements		Effective participants - act as advocate for views that may not be their own. Support conclusions using reasoned arguments
<b>Nutrition</b>	Fibre	Discuss and present What is fibre?		Effective participants - act as advocate

		<p>What foods are they in?  How do they contribute to energy levels in the diet?  Impact on body if you have too much or too little  Nutritional requirements</p>		<p>for views that may not be their own.  Support conclusions using reasoned arguments</p>
<p><b>Nutrition</b>  <b>52 -61</b></p>	<p>Micro nutrients  Vitamins</p>	<p>Importance of vitamins in diet.  Functions of vitamins.  Sources  Deficiency and overdosing  RDA of vits</p>	<p>Research specific vitamins.  Share info</p>	<p>Reflective learners  - Set goals with success criteria.</p>
<p><b>Nutrition</b>  <b>48-50</b></p>	<p>Micro nutrients  Minerals</p>	<p>Importance in diet.  Function.  Sources  Deficiency and overdosing  RDA of mins</p>	<p>Research specific minerals  Share info</p>	<p>Reflective learners  - Set goals with success criteria.</p>
<p><b>Values</b>  <b>Issues</b>  <b>Proudlove</b>  <b>243 -248</b></p>	<p>Why new products are needed.  Factors that influence the development of new products.    Consumer evaluation of new products</p>	<p>- Discuss the reason manufacturers develop new products.    List the factors - Socio Cultural, Market, Industrial    Evaluations are made on the basis of consumers attitudes towards "attributes" of the products.  Attitudes consist of  -Beliefs  -Judgements  Understand the concept of quality of design</p>	<p>Complete exam questions to test knowledge.</p>	<p>Independent enquirers  - Explore issues events or problems from different perspectives.  - Analyse info judging relevance and value  - Influence of circumstances ,</p>

				beliefs feeling and events.
<b>Values Issues Proudlove 248 -255</b>	Product design	<ul style="list-style-type: none"> <li>- Students must be aware of current trends in the food industry</li> <li>- Discuss how changes in eating habits can influence the design of products, particularly snack meals</li> <li>- Influence of environmental, ethical issues</li> <li>- Market dominated by main retailers who influence development.</li> <li>- Growth of specialist areas - sports nutrition.</li> </ul>	<p>Complete exam questions</p> <p>Discussion of trends</p>	<p>Effective participators</p> <ul style="list-style-type: none"> <li>- act as advocate for views that may not be their own.</li> <li>- Support conclusions using reasoned arguments</li> <li>-</li> </ul>
<b>Values Issues Proudlove 255 - 258</b>	Influence of new technologies and new materials on the development of new food products.	<ul style="list-style-type: none"> <li>- Technologies influence the development of new products, microwave, irradiation, ambient storage and new cooking methods</li> <li>- Influence of biotechnology on product development</li> </ul>	<p>Complete exam questions</p> <p>Discussion of trends</p>	<p>Effective participators</p> <ul style="list-style-type: none"> <li>- identify improvement that would benefit others as well as themselves</li> </ul>
<p>PORTFOLIO OF CREATIVE SKILLS - PRODUCT DESIGN</p> <p>7 weeks of class time to be spent on this.</p>	Students respond creatively and adventurously to a design brief of their choice. The solution must be fit for purpose and viable.	Independent work guided by the teacher. Modelling should be used to test features like proportions, scale, function, organoleptic acceptability by experimental work/making.	<p>To be included in Portfolio of Creative Skills for moderation and marking.</p> <p>Total marks available: 30</p>	<p>Creative thinkers:</p> <ul style="list-style-type: none"> <li>• Connect their own and others' ideas and experiences in inventive ways</li> <li>• Adapt ideas as circumstances change.</li> </ul>

