

# **FOOD SCIENCE AND TECHNOLOGY**

## **Unit 2B Hospitality**

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## Teaching and Learning Program – Food Science and Technology (Hospitality)

### Unit 2B: The undercover story of food

Unit learning focus: Food processing systems that ensure food safety

WEEK	CONTENT	LEARNING EXPERIENCES	ASSESSMENT	RESOURCES
1	<p>Digestion of nutrients</p> <p>Food industry specific terminology</p>	<ul style="list-style-type: none"> <li>• Introduction to the unit, attendance, assessment and equipment requirements</li> <li>• Provide students with:               <ul style="list-style-type: none"> <li>○ syllabus document Unit 2B pages 27-28</li> <li>○ unit outline</li> <li>○ assessment outline</li> <li>○ school assessment policy</li> <li>○ grade descriptors</li> </ul> </li> <li>• Digestion               <p>Teacher instruction and student research</p> <ul style="list-style-type: none"> <li>○ revise nutrients and their function in the body</li> <li>○ label a diagram of the gastro-intestinal tract</li> <li>○ use the diagram to show where the digestion of nutrients occurs in the gastro-intestinal tract</li> </ul> </li> <li>• Terminology               <p>Use food industry specific terminology to label the mechanical or chemical way food is broken down and moved through the gastro-intestinal tract during digestion e.g. peristalsis, enzymes, secretions, chime, chewing</p> </li> <li>• Practical lesson               <p>Establish student skill levels</p> <ul style="list-style-type: none"> <li>○ prepare a simple dish that includes a protein commodity, a carbohydrate commodity and fibre e.g. stir fry beef and rice, cabbage rolls and rice,</li> </ul> </li> </ul>		<p>Sullivan, C. Meredith, S and Weiher, L. (2004). <i>Hi Tech: Food Technology Stage 5</i>. Melbourne: Heinemann Harcourt Education, p.175</p> <p>Alexander, Y. Luscombe. J McNally, E. (2008). <i>Food Science and Technology: A Resource for Units 2A-2B</i> Cottesloe, Australia; Impact Publishing, Digestion p.145 Quality and safe food requirements p. 316</p>

	Quality and safe food requirements e.g. appropriate clothing and footwear, safe food handling procedures, personal behavior, personal hygiene relevant to health conditions and illness	<ul style="list-style-type: none"> <li>○ meat and salad sandwich</li> <li>○ use a blank diagram of the gastro-intestinal tract to illustrate the digestion of the meat, rice and fibre through the digestive system</li> <li>○ students to demonstrate quality and safe food requirements during the practical lesson</li> </ul>		Fisher, J. <i>Instant Lessons in Nutrition</i> . (2006). Sydney Australia: Learning Essentials, p.11 <a href="http://www.skool.com.uk/viewdetails_ks4.aspx">www.skool.com.uk/viewdetails_ks4.aspx</a>
2	Food industry specific terminology  Interrelated local and societal factors that drive targeted innovative change in food and related systems i.e. food allergies and intolerances	<ul style="list-style-type: none"> <li>● Definitions <ul style="list-style-type: none"> <li>○ food allergy</li> <li>○ food intolerance</li> <li>○ allergen</li> <li>○ anaphylactic response</li> </ul> </li> <li>● Food allergy <ul style="list-style-type: none"> <li>○ identify and discuss common food allergies e.g. chocolate, eggs, milk</li> <li>○ examine a display of processed products and restaurant menus</li> <li>○ determine the innovative changes in product labelling and menu design in response to the incidence of food allergies</li> <li>○ identify the local and societal factors that have led to the development of allergen free products e.g. lifestyle, consumption of processed foods, cost, food availability</li> </ul> </li> <li>● Food intolerance <ul style="list-style-type: none"> <li>○ identify and discuss common food intolerances e.g. lactose intolerance, gluten intolerance</li> <li>○ examine a display of products developed for people with food intolerances e.g. gluten free flour, wheat free products, lactose free, egg free, nut free</li> <li>○ determine the innovative change in product development in response to the incidence of food intolerances</li> </ul> </li> </ul>		Heath, G. McKenzie, H. Tully, L. (2008). <i>Food by Design</i> . Melbourne: Pearson Education Australia. p.131-134, 281, 204, 209  Ridgewell, T. Parker, K. Morrison, J. (1996). <i>Active Food Technology Part 3</i> . Melbourne, Australia: Longman. p. 84  Teacher resources: <a href="http://www.exploratorium.edu/cooking/bread/glutengood1test.html">http://www.exploratorium.edu/cooking/bread/glutengood1test.html</a>  <a href="http://www.foodstandards.gov.au/the_code/nutritionpanelcalculator/">http://www.foodstandards.gov.au/the_code/nutritionpanelcalculator/</a>  Recommended reading: Reynolds, J. <i>Nutrition the Inside Story 2<sup>nd</sup> edition</i> (2008). HEIA, ACT,

	<p>Food preparation and presentation skills e.g. introduction to cutting techniques</p>	<ul style="list-style-type: none"> <li>○ access fast food restaurant websites and menus to determine the prevalence of warnings to consumers of the inclusion of commodities that cause reactions to food intolerances</li> <li>● Diet related disorders <ul style="list-style-type: none"> <li>○ determine the dietary implications of diabetes, coeliac disease</li> </ul> </li> <li>● Practical lesson <p>Produce dishes suitable for coeliac disease</p> <ul style="list-style-type: none"> <li>○ prepare products using wheat flour and the alternative gluten free product e.g. pasta, muffins, pancake mix</li> <li>○ conduct sensory evaluation to compare products</li> <li>○ compare the cost of the products</li> <li>○ demonstrate food preparation and presentation skills e.g. methods of cookery, plating</li> </ul> </li> <li>● <b>Introduce Task 3</b> <ul style="list-style-type: none"> <li>○ explain the requirement to collect three media articles related to current food science issues that impact on the hospitality industry e.g. nutrition of restaurant food, innovative food products or services that meet specified consumer needs, food safety in the hospitality industry, food additives, ethical promotional strategies</li> <li>○ obtain references for each article</li> <li>○ use a sample article to demonstrate how to identify issues and supporting and opposing viewpoints e.g. articles 'Beyond tolerable', 'Alternative Bites', 'Gluten Free For All'. Ref: <i>Spice Magazine</i>. (Winter 2009 ed.), Western</li> </ul> </li> </ul>	<p>Introduce Task 3</p>	<p>Australia, (NIS) Ch 11 p. 119</p> <p><i>Spice Magazine</i>. (Winter 2009 ed.), Western</p>
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		<p>Australia: Spice Publishing Pty Ltd.</p> <ul style="list-style-type: none"> <li>○ provide and explain a writing model for the response</li> </ul>		<p>Australia: Spice Publishing Pty Ltd.</p>
3	<p>Quality and safe food requirements e.g. appropriate clothing and footwear, safe food handling procedures, personal behavior, personal hygiene relevant to health conditions and illnesses</p> <p>Principles of HACCP to manage food safety</p>	<ul style="list-style-type: none"> <li>● <b>Continue Task 3</b> <ul style="list-style-type: none"> <li>○ in and out of class time</li> <li>○ provide feedback as each written response is completed</li> </ul> </li> <li>● <b>Introduce Task 1 Part A</b> <ul style="list-style-type: none"> <li>○ explain the system of tutorials required for assessment</li> </ul> </li> <li>● Causes of food spoilage Teacher instruction, provide samples of foods that have spoiled due to environmental, enzymatic and microbial contamination <ul style="list-style-type: none"> <li>○ define 'food spoilage', 'food deterioration'</li> <li>○ environmental causes of food spoilage e.g. poor cleaning of kitchens and equipment, unhygienic waste disposal, insects, personal hygiene</li> <li>○ enzymatic causes of food spoilage e.g. ripening of fruit causes moulds and rotting, exposure to air causes enzymatic browning</li> <li>○ microorganism e.g. bacteria, yeasts and moulds, food poisoning</li> </ul> </li> <li>● Identify and discuss food handling practices designed to ensure food safety in the hospitality industry e.g. HACCP, sanitising, uniforms, personal hygiene relevant to health conditions and illnesses labelling and storage procedures <ul style="list-style-type: none"> <li>○ identify critical control points and implement HACCP in the kitchen</li> </ul> </li> </ul>	<p>Introduce Task 1 Part A</p>	<p>Perraton, G. Boddy, G. Compton, L. et al. (2005). <i>Food and Technology, Book 2</i>. Milton, Qld, Australia.: John Wiley and Son. Chapter 10</p> <p>Heath, G. McKenzie, H. Tully, L. (2005). <i>Food Solutions: Food and Technology Units 3&amp;4</i>, Port Melbourne, Vic: Pearson Education Australia. p. 166, 296</p> <p>Teacher resources:  <a href="http://www.abc.net.au/schoolstv/food/ep2.htm">www.abc.net.au/schoolstv/food/ep2.htm</a>  <a href="http://www.ific.org/nutrition/functional/index.cfm">http://www.ific.org/nutrition/functional/index.cfm</a>  <a href="http://www.extension.psu.edu/HealthWellness/FunctionalFood.html">http://www.extension.psu.edu/HealthWellness/FunctionalFood.html</a>  <a href="http://www.foodstandardsdevelopment/proposals/proposal293nutritionhealthandrelatedclaims/inex.cfm">http://www.foodstandardsdevelopment/proposals/proposal293nutritionhealthandrelatedclaims/inex.cfm</a></p>

	<p>Food industry specific terminology</p> <p>Functional properties of foods modified by processing techniques or the addition of other ingredients to prevent food spoilage and develop products</p> <p>Dietary planning uses the nutritional value of food to achieve specific dietary requirements e.g. food choice software, food diaries</p> <p>Food preparation and presentation skills e.g. introduction to cutting techniques</p> <p>Strategies to maximize the use of human and non-human resources</p>	<ul style="list-style-type: none"> <li>• Tutorial 1 – removal of moisture – dehydration <ul style="list-style-type: none"> <li>○ use food industry specific terminology to:</li> <li>○ conduct experiment and record the results</li> <li>○ complete conclusions</li> <li>○ produce dehydrated onions, tomatoes and herbs</li> <li>○ use food choice software to determine the effect of dehydration on food products, compare the natural with the processed product</li> </ul> </li> <li>• Practical lesson <ul style="list-style-type: none"> <li>○ produce dried herbs, onions and tomatoes</li> <li>○ packaging and storage techniques to prevent food spoilage</li> <li>○ demonstrate food preparation and presentation skills e.g. methods of cookery, presentation of preserved products</li> <li>○ select recipes that maximise the use of non-human resources</li> </ul> </li> </ul>	<p><b>Task 1 Part A Tutorial 1 Due</b></p>	<p><a href="http://www.nceff.com.au/resources/index.html">http://www.nceff.com.au/resources/index.html</a></p> <p><a href="http://www.afgc.org.au/index.cfm?id=131">http://www.afgc.org.au/index.cfm?id=131</a></p> <p><a href="http://www.foodscience.csiro.au/functional-foods.htm">http://www.foodscience.csiro.au/functional-foods.htm</a></p> <p><a href="http://www.mealsmatter.org/EatingForHealth/FunctionalFoods/func_list.aspx#chee">http://www.mealsmatter.org/EatingForHealth/FunctionalFoods/func_list.aspx#chee</a></p>
<p><b>4</b></p>	<p>Food industry specific terminology</p> <p>Functional properties of foods modified by processing techniques or the addition of other ingredients to prevent food spoilage and develop products</p> <p>Dietary planning uses the nutritional value of food to achieve specific dietary requirements e.g. food</p>	<ul style="list-style-type: none"> <li>• <b>Continue Task 3</b> <ul style="list-style-type: none"> <li>○ in and out of class time</li> <li>○ provide feedback as each written response is completed</li> </ul> </li> <li>• Tutorial 2 – Preservation - addition of chemicals – salt <ul style="list-style-type: none"> <li>○ use food industry specific terminology to:</li> <li>○ conduct experiment and record results</li> <li>○ complete conclusions</li> <li>○ use food choice software to determine the effect of addition of chemicals on food products, compare the natural with the processed product</li> </ul> </li> </ul>	<p><b>Task 1 Part A Tutorial 2 Due</b></p>	<p><a href="http://www.meatupdate.csiro.au/data/Food_safety_02-96.pdf">www.meatupdate.csiro.au/data/Food_safety_02-96.pdf</a></p> <p>Recommended reading: Heath, G. McKenzie, H. Tully, L. (2005). <i>Food Solutions Food &amp; Technology Units 1&amp;2</i>. Port Melbourne, Vic.: Pearson Education Australia. p175</p> <p>Reynolds, J. (2008). <i>Nutrition the Inside Story, 2<sup>nd</sup> edition</i>. HEIA, ACT, Australia, (NIS) p. 166-170</p>

	<p>choice software, food diaries</p> <p>Preparation of food orders and production plans</p> <p>Food preparation and presentation skills e.g. introduction to cutting techniques</p> <p>Strategies to maximize the use of human and non-human resources</p>	<ul style="list-style-type: none"> <li>• Practical lesson: <ul style="list-style-type: none"> <li>Preservation – addition of chemicals – sugar and salt - preserve commodities using fruit in season, dried fruit, vegetables e.g. plum jam, dried apricot jam, onion jam, olives, red onion jam</li> <li>○ use a range of equipment e.g. stove top, microwave</li> <li>○ produce a food order</li> <li>○ bottling and storage techniques to prevent spoilage</li> <li>○ store for possible use in Task 1 Part B</li> <li>○ demonstrate food preparation and presentation skills e.g. methods of cookery, presentation of preserved products</li> <li>○ select recipes that maximise the use of non-human resources</li> </ul> </li> </ul>		
5	<p>Food industry specific terminology</p> <p>Functional properties of foods modified by processing techniques or the addition of other ingredients to prevent food spoilage and develop products</p>	<ul style="list-style-type: none"> <li>• <b>Continue Task 3</b> <ul style="list-style-type: none"> <li>○ in and out of class time</li> <li>○ provide feedback as each written response is completed</li> <li>○ skills for oral presentations e.g. preparation, palm cards, speaking to an audience, time trialing</li> <li>○ preparation of oral presentation</li> </ul> </li> <li>• Tutorial 3 – Preservation – altering temperature – freezing <ul style="list-style-type: none"> <li>○ use food industry specific terminology to:</li> <li>○ conduct experiment and record results</li> <li>○ complete conclusions</li> <li>○ use food choice software to determine the effect of freezing on food products, compare the natural with the processed product</li> </ul> </li> </ul>	<p><b>Task 1 Part A</b></p> <p><b>Tutorial 3 Due</b></p>	

	<p>Dietary planning uses the nutritional value of food to achieve specific dietary requirements e.g. food choice software, food diaries</p> <p>Preparation of production plans and food orders</p> <p>Food preparation and presentation skills e.g. introduction to cutting techniques</p> <p>Strategies to maximize the use of human and non-human resources</p> <p>Interrelated local and societal factors that drive targeted innovative change in food and related systems i.e. food allergies and intolerances</p> <p>Ethical issues arising from resource use, waste management practices, deceptive product downsizing and advertising</p>	<ul style="list-style-type: none"> <li>• Practical lesson <ul style="list-style-type: none"> <li>○ produce a frozen dessert e.g. cassata, sorbet, icecream</li> <li>○ store for possible use in Task 1 Part B</li> <li>○ produce a food order</li> <li>○ demonstrate food preparation and presentation skills e.g. methods of cookery, presentation of preserved products</li> <li>○ select recipes that maximise the use of human and non-human resources e.g. time, money, equipment</li> </ul> </li> <li>• Teacher instruction <ul style="list-style-type: none"> <li>○ Preservation by altering temperature <ul style="list-style-type: none"> <li>○ canning, UHT, pasteurisation</li> <li>○ processes used</li> <li>○ innovative change in food systems e.g. product development</li> <li>○ application of each process e.g. shelf life, food availability, transportability of products</li> <li>○ interrelationship of local and societal factors that lead to product development e.g. lifestyle, leisure, cost, food safety, food storage</li> <li>○ environmental aspects of food manufacturing e.g. energy use, waste management practices, pollution</li> <li>○ advertising practices e.g. ethical promotion of health claims and product features, ethical and consistent product weight</li> </ul> </li> </ul> </li> </ul>		
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<p>6</p>	<p>Use food industry specific terminology</p> <p>Consequences of innovations and trends for the health, environment and economy of communities</p>	<ul style="list-style-type: none"> <li>• Oral presentations <ul style="list-style-type: none"> <li>○ select one reviewed article to respond to orally</li> <li>○ provide an introduction that clearly defines the response issue</li> <li>○ accurately use relevant terminology</li> <li>○ organise and analyse a range of accurate and relevant information that supports your response to the article</li> <li>○ apply knowledge of current issues, trends and innovation in food science and the hospitality industry that respond to the article</li> <li>○ provide a logical conclusion that includes two recommendations in response to the article</li> <li>○ speak clearly and confidently, address the audience, keep to the ten minute time limit</li> </ul> </li> <li>• Class time to be used to review progress with tutorials and complete outstanding work</li> </ul>	<p><b>Task 3 Due</b></p>	
<p>7</p>	<p>Food industry specific terminology</p> <p>Functional properties of foods modified by processing techniques or the addition of other ingredients to prevent food spoilage and develop products</p> <p>Preparation of production plans and food orders</p> <p>Strategies to maximize the use of human and non-human resources</p>	<ul style="list-style-type: none"> <li>• Tutorial 4 – Preservation – altering pH – pickling <ul style="list-style-type: none"> <li>○ use food industry specific terminology to:</li> <li>○ conduct experiment and record results</li> <li>○ complete conclusions</li> <li>○ use food choice software to determine the effect of pickling on food products, compare the natural with the processed product</li> </ul> </li> <li>• Practical lesson: <ul style="list-style-type: none"> <li>○ produce a product preserved by the use of an acid brine or a salt and acid based brine e.g. pickled onions, preserved lemons, pickled vegetables</li> <li>○ produce a food order</li> <li>○ store for possible use in Task1 Part B</li> <li>○ select recipes that maximise the use of human and non-human resources e.g. time, money,</li> </ul> </li> </ul>	<p><b>Task 1 Part A</b> <b>Tutorial 4 Due</b></p>	



	<p>technological advancements e.g. calcium/milk, folate/bread</p> <p>Nutrients that are added to food to make it healthier</p> <p>Consumer and enterprise relationships that are affected by fashions, trends, markets and competitive market practices</p> <p>Value-adding to natural foods to meet producer and consumer requirements by the application of technological advancements e.g. calcium/milk, folate/bread</p>	<p>tomato, walnuts, tea, citrus fruit, oats, yoghurt</p> <ul style="list-style-type: none"> <li>○ identify health claims and added or reduced nutrient content of the processed foods</li> <li>○ read labels and use food choice software to identify the health benefits of the display foods</li> <li>○ define the terms <ul style="list-style-type: none"> <li>- value added</li> <li>- functional foods</li> <li>- functional whole foods</li> <li>- fortified</li> </ul> </li> <li>○ classify the display foods according to the above terms</li> <li>○ discuss natural foods as being functional foods, identify the nutritional function of natural display foods</li> <li>○ identify products that have been nutritionally value added, determine the reasons e.g. <ul style="list-style-type: none"> <li>- fashion</li> <li>- trends</li> <li>- competitive market practices</li> <li>- consumer demand,</li> <li>- public health initiatives</li> </ul> </li> <li>○ identify foods that have undergone additional processing to improve their value e.g. <ul style="list-style-type: none"> <li>- precut – salads, fruit</li> <li>- ready to cook meat – marinated, meat balls, kebabs, diced steak etc.</li> <li>- heat and serve – chips, meals</li> </ul> </li> <li>○ value adding by the hospitality industry e.g. <ul style="list-style-type: none"> <li>- garnishing and decorating</li> <li>- plating and presentation</li> <li>- food displays e.g. dessert cabinets</li> <li>- innovative menu planning and food preparation</li> <li>- restaurant environment</li> </ul> </li> </ul>	<p>Reynolds, J. (2008). <i>Nutrition the Inside Story, 2<sup>nd</sup> edition</i>. HEIA, ACT, Australia, (NIS) p. 168 - 175</p> <p>Perraton, G. Boddy, G. Compton, L. et al. (2005) <i>Food and Technology, Book 2</i>, Milton, Qld, Australia: John Wiley and Son. Ch. 10</p> <p>Heath, G. McKenzie, H. Tully, L. (2005). <i>Food Solutions Food &amp; Technology Units 3&amp;4</i>, Port Melbourne, Vic: Pearson Education Australia. p.166, 296</p> <p><a href="http://www.mixph.com/?p=318">www.mixph.com/?p=318</a></p> <p><a href="http://en.wikipedia.org/wiki/Soft_serve">http://en.wikipedia.org/wiki/Soft_serve</a></p>
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		<ul style="list-style-type: none"> <li>- table presentation</li> <li>- customer service</li> </ul> <ul style="list-style-type: none"> <li>• View ABC Food for Thought – Functional foods Discuss: <ul style="list-style-type: none"> <li>○ changes in food preparation practices due to a demand for nutritious food</li> <li>○ functional foods that have been introduced across cultures</li> <li>○ economic cost associated with fulfilling special nutritional needs</li> <li>○ global nutritional problems that need to be addressed</li> <li>○ implications for the future - new products to meet informed consumer demands</li> </ul> </li> <li>• Classwork <ul style="list-style-type: none"> <li>○ students to locate the fries and soft serve articles required for the task</li> <li>○ identify three information sources relevant to the task e.g. access websites, visit restaurants, conduct interviews, collect menus</li> <li>○ begin investigation of the production of fries</li> <li>○ analyse the flow chart, identify the stages in processing and whether the purpose is to improve sensory properties or reduce food spoilage</li> </ul> </li> <li>• Practical lesson: <ul style="list-style-type: none"> <li>○ use functional processed foods and natural foods to produce dishes suitable for a diabetic e.g. main, dessert, snacks</li> <li>○ justify the choice of commodities</li> </ul> </li> </ul>		<p>ABC Food for Thought <i>Functional Foods</i> (2006), Northcote Victoria. Avenue Education <a href="http://www.abc.net.au/schoolstv/food/ep2.htm">http://www.abc.net.au/schoolstv/food/ep2.htm</a></p> <p><a href="http://www.mixph.com/?p=318">www.mixph.com/?p=318</a> &gt; illustrated flow of processing potato</p> <p><a href="http://en.wikipedia.org/wiki/Soft_serve">http://en.wikipedia.org/wiki/Soft_serve</a> &gt; pre-mix</p>
<b>10</b>		<ul style="list-style-type: none"> <li>• Continue Task 2 <ul style="list-style-type: none"> <li>○ begin investigation of the production of soft</li> </ul> </li> </ul>		

	<p>Value-adding to natural foods to meet producer and consumer requirements by the application of technological advancements e.g. calcium/milk, folate/bread</p>	<ul style="list-style-type: none"> <li>○ serve <ul style="list-style-type: none"> <li>○ reasons why restaurants use value added products e..g. <ul style="list-style-type: none"> <li>- type of establishment</li> <li>- reduce labour costs</li> <li>- reduce time taken to prepare food</li> <li>- turn-around time required from ordering to food being served</li> <li>- shorten customer wait time</li> <li>- availability of storage facilities</li> <li>- consistent quality and portioning</li> </ul> </li> </ul> </li> <li>○ report writing</li> <li>● Practical lesson <ul style="list-style-type: none"> <li>Comparison of home-made and restaurant purchased fries <ul style="list-style-type: none"> <li>○ purchase one quantity of fries</li> <li>○ record dimensions, record weight and cost</li> <li>○ prepare fries from whole potatoes using same dimensions and weight of potato as for purchased fries</li> <li>○ compare the cost of the same quantity of each product</li> <li>○ determine the reasons for the difference</li> </ul> </li> </ul> </li> </ul>	<p><b>Task 2 Due</b></p>	
<p><b>11</b></p>	<p>Structured teamwork skills suitable for large scale productions e.g. functions or food demonstrations for</p>	<ul style="list-style-type: none"> <li>● <b>Introduce Task 1 Part B</b> <ul style="list-style-type: none"> <li>○ distribute and discuss the task</li> </ul> </li> <li>● Chef's Table planning <ul style="list-style-type: none"> <li>○ identify guests and determine dietary needs e.g. produce the text of an email or phone call or conduct a survey</li> <li>○ teamwork skills e.g. communication, negotiation, conflict resolution, problem solving, reliability, initiative. Skills to be practiced during the planning phase of the task</li> </ul> </li> </ul>	<p>Introduce Task 1 Part B</p>	<p>Recommended reading: Reynolds, J. (2008). <i>Nutrition the Inside Story, 2<sup>nd</sup> edition</i>. HEIA, ACT, Australia, (NIS). Ch. 12</p> <p>Compton, L. Warren, C. (2008). <i>e-Food &amp; Technology Book 1</i>. Australia: Oxford University Press. p. 22-31</p>

	<p>a minimum of 20 people</p> <p>Conflict resolution</p> <p>Strategies to maximise the use of human and non-human resources</p> <p>Selecting, planning, preparing and presenting of food to suit a purpose</p> <p>Principles of HACCP to manage food safety</p> <p>Food preparation and presentation skills e.g. introduction to cutting techniques</p>	<ul style="list-style-type: none"> <li>○ individually select a main and dessert recipe that include preserved commodities</li> <li>○ form small teams and evaluate the recipe selections of the team, consider the use of human and non-human resources</li> <li>○ produce a PMI chart that summarises the recipe evaluation</li> <li>○ negotiate within the small team to select a two-course menu and allocate trialing roles to team members</li> <li>○ produce a food order and production plan for menu trialing</li> <li>○ HACCP. Identify critical control points in the preparation, production, storage and service of the menu. Explain safe food handling practices at each critical control point</li> </ul> <ul style="list-style-type: none"> <li>● Practical lesson: <ul style="list-style-type: none"> <li>Small team menu trialing</li> <li>○ participate effectively in trialing the menu</li> <li>○ conduct and record sensory evaluation of dishes</li> <li>○ trial the presentation of dishes</li> </ul> </li> <li>● Event portfolio <ul style="list-style-type: none"> <li>○ prepare portfolio, add <ul style="list-style-type: none"> <li>- resource evaluation</li> <li>- PMI chart</li> <li>- trial food order and production plan</li> <li>- trial sensory evaluation</li> <li>- guests specified needs</li> </ul> </li> </ul> </li> </ul>		
12		<ul style="list-style-type: none"> <li>● Chef's Table planning <ul style="list-style-type: none"> <li>○ preserved products produced for the tutorials may be included, however there must be ample opportunity for skills with food to be</li> </ul> </li> </ul>		

	<p>Structured teamwork skills suitable for large scale productions e.g. functions or food demonstrations for a minimum of 20 people</p>	<p>demonstrated</p> <ul style="list-style-type: none"> <li>○ all small teams communicate and negotiate to finalise the menu for the Chef's Table function</li> <li>○ students individually produce a food order and production plan for the entire function</li> <li>○ identify production teams and allocate team roles</li> <li>○ individually produce a guest response form</li> <li>○ produce a table menu and buffet table cards</li> </ul> <ul style="list-style-type: none"> <li>● Practical lesson: <ul style="list-style-type: none"> <li>○ Trial the restaurant set up e.g. <ul style="list-style-type: none"> <li>○ table arrangement</li> <li>○ table settings</li> <li>○ equipment e.g. polish glasses and cutlery, trial table decorations</li> <li>○ trail buffet table setting</li> <li>○ coffee and tea making</li> <li>○ trail table service of beverages</li> </ul> </li> </ul> </li> <li>● Event portfolio <ul style="list-style-type: none"> <li>○ add to portfolio <ul style="list-style-type: none"> <li>- production food order and production plan</li> <li>- guest evaluation form</li> <li>- table menu</li> <li>- buffet table card</li> </ul> </li> </ul> </li> </ul>		
<p><b>13</b></p>	<p>Mise-en-place (everything in its place)</p> <p>Skills to manage large-scale food systems or services e.g. functions or food demonstrations for a minimum of 20 people</p> <p>Selecting, planning, preparing and</p>	<ul style="list-style-type: none"> <li>● Chef's table function <ul style="list-style-type: none"> <li>○ students work in production teams to complete either kitchen or restaurant mise-en-place</li> <li>○ students to demonstrate effective teamwork skills</li> <li>○ students to implement a HACCP plan</li> <li>○ review the production plan, team and individual roles and the need for monitoring of systems of work</li> </ul> </li> </ul>		

	<p>presenting of food to suit a purpose</p> <p>Ongoing monitoring to address design challenges when producing food products, services or systems to meet specified consumer needs, industry standards, societal beliefs and values using the technology process</p>	<ul style="list-style-type: none"> <li>○ present the function, produce food items and provide customer service</li> <li>○ students to follow and constantly modify the production plan in response to the progress of the function</li> <li>○ collect guest response forms</li> <li>○ students to demonstrate a very high standard of health and safety practices</li> <li>○ students to demonstrate skills with food</li> <li>○ clean the kitchen and restaurant</li> </ul>		
<b>14</b>		<ul style="list-style-type: none"> <li>● Chef' Table evaluation <ul style="list-style-type: none"> <li>○ as a whole class group collate guest responses</li> <li>○ work individually to analyse responses</li> <li>○ complete a written evaluation</li> </ul> </li> <li>● Complete collation of event portfolio</li> <li>● Commence exam preparation <ul style="list-style-type: none"> <li>○ reading and interpreting exam questions</li> <li>○ allocating time during the exam e.g. explain the suggested time allocations on sample exam papers</li> <li>○ examination techniques</li> </ul> </li> </ul>	<b>Task 1 Part B Due</b>	
<b>15</b>		<ul style="list-style-type: none"> <li>● Exam preparation Course revision e.g. quizzes, paired work, extended in-class essays, examination techniques</li> <li>● Students complete a two hour written exam <ul style="list-style-type: none"> <li>○ multiple choice</li> <li>○ short answer</li> <li>○ extended response</li> </ul> </li> </ul>	<b>Task 4 Due</b>	

## Assessment outline - Food Science and Technology (Hospitality)

### Unit 2B: The undercover story of food

Unit learning context: Food processing systems that ensure food safety

Assessment type	Type weighting	Task weighting	Assessment task	Week due	Content	Outcome 1 Understanding food materials	Outcome 2 Developing food opportunities	Outcome 3 Working in food environments	Outcome 4 Understanding food in society
Investigation	30% (CC weighting 30-40%)	20%	<b>Task 1 Part A</b> Food spoilage, preservation and properties investigation	8	Properties of foods Nutrition Food practices and processing Laws and regulations	✓	✓	✓	✓
		10%	<b>Task 2</b> Investigate the use of value-added commodities by the hospitality industry	10	Food as a commodity Properties of food Nutrition Food practices and processing Issues, trends and innovation	✓			✓
Production	40% (CC weighting 40-50%)	40%	<b>Task 1 Part B</b> Chef's Table planning, production and evaluation Skills with food assessment	14	Properties of food Technology process Skills with food Issues, trends and innovation Laws and regulations		✓	✓	
Response	30% (CC weighting 10-30%)	10%	<b>Task 3</b> Current issues	6	Issues, trends and innovation Consumer and enterprise relationships	✓			✓
		20%	<b>Task 4</b> Exam (not provided)	15	Nature of food Processing food Food in society	✓	✓	✓	✓

## Assessment Task 1 Part A: Unit 2B FSTH

### Task 1 Part A: Food spoilage, properties and preservation investigation

**Assessment type:** Investigation

**Outcomes:** Outcome 1: Understanding Food Materials  
Outcome 4: Understanding Food in Society

**Unit context:** Food processing systems to ensure food safety

**Task duration:** 6 weeks

**Task weighting:** 20% of unit total

### Task 1 Part A: Food spoilage, properties and preservation investigation (90 marks – 20%)

Investigate the causes of food spoilage. Produce a report of the investigation. Complete five tutorials that investigate food preservation techniques, submit the tutorials weekly.

#### What you need to do:

#### 1. Investigate the causes of food spoilage

- Define the terms 'food deterioration' and 'food spoilage'
- Provide three examples and explain how environmental factors may cause food spoilage
- Provide three examples of and explain how enzymatic action may cause food spoilage
- Provide three examples and explain how microbial activity can cause food spoilage  
Describe three food handling practices or processing systems that are designed to ensure food safety in the hospitality industry
- Analyse two economic and two legal implications of food spoilage on hospitality enterprises.

#### 2. Report writing

- Consistently use relevant, correctly spelt terminology
- Include an introduction that clearly outlines the investigation issue
- Analyse and organise a range of accurate and relevant information
- Provide a logical conclusion
- Use an authorised format to record all references.

#### 3. Complete food preservation tutorials

- Conduct experiments and record results to Investigate five food preservation techniques i.e.
  - reducing moisture levels
  - addition of chemicals
  - increase or decrease in temperature
  - alteration of pH levels
  - fermentation.
- For each preservation technique::
  - analyse two effects of the preservation technique on the commodity being tested
  - explain the process by which the functional properties of foods are modified by the preservation technique to prevent food spoilage
  - describe the effect of the preservation technique on nutrition
  - justify one economic and one product development implication of the use of each preservation technique by the hospitality industry
  - describe one food safety issue involved in the production and one in the consumption of food preserved by each technique

- select an appropriate recipe and process to demonstrate each preservation technique and maximise human and non-human resource use.

<b>What is required for assessment?</b>	<b>Due dates</b>
<input type="checkbox"/> Tutorial 1	Week 3
<input type="checkbox"/> Tutorial 2	Week 4
<input type="checkbox"/> Tutorial 3	Week 5
<input type="checkbox"/> Tutorial 4	Week 7
<input type="checkbox"/> Tutorial 5	Week 8
<input type="checkbox"/> Report	Week 8

## Marking key Task 1 Part A: Unit 2B FSTH

Food preservation investigation	Marks awarded /90
<b>1. Investigate the causes of food spoilage</b>	
<ul style="list-style-type: none"> <li>Defines the terms 'food deterioration ' and 'food spoilage' (1 mark each definition)</li> </ul>	/2
<ul style="list-style-type: none"> <li>Provides three examples and explains how environmental factors may cause food spoilage               <ul style="list-style-type: none"> <li>provides three examples (1 mark each)</li> <li>explanation (1 mark)</li> </ul> </li> </ul>	/3 /1
<ul style="list-style-type: none"> <li>Provides three examples and explains how enzymatic action may cause food spoilage.               <ul style="list-style-type: none"> <li>provides three examples (1 mark each)</li> <li>explanation (1 mark)</li> </ul> </li> </ul>	/3 /1
<ul style="list-style-type: none"> <li>Provides three examples and explains how microbial activity can cause food spoilage               <ul style="list-style-type: none"> <li>provides three examples (1 mark each)</li> <li>explanation (1 mark)</li> </ul> </li> </ul>	/3 /1
<ul style="list-style-type: none"> <li>Describes three food handling practices or processing systems that are designed to ensure food safety in the hospitality industry (1 mark each practice or process)</li> </ul>	/3
<ul style="list-style-type: none"> <li>Analyses two economic and two legal implications of food spoilage on hospitality enterprises               <ul style="list-style-type: none"> <li>analyses two economic implications (1 mark each)</li> <li>analyses two legal implications (1 mark each)</li> </ul> </li> </ul>	/2 /2
<b>Total – Investigate the causes of food spoilage</b>	<b>/21</b>
<b>2. Report writing</b>	
<ul style="list-style-type: none"> <li>Consistently uses relevant, correctly spelt terminology               <ul style="list-style-type: none"> <li>consistently uses relevant terminology (1 mark)</li> <li>consistently spells relevant terminology correctly (1 mark)</li> </ul> </li> </ul>	/1 /1
<ul style="list-style-type: none"> <li>Includes an introduction that clearly outlines the investigation issue               <ul style="list-style-type: none"> <li>includes an introduction (1 mark)</li> <li>clearly outlines the investigation issue (1 mark)</li> </ul> </li> </ul>	/1 /1
<ul style="list-style-type: none"> <li>Analyses and organises a range of accurate and relevant information               <ul style="list-style-type: none"> <li>analyses accurate and relevant information (1 mark)</li> <li>organises accurate and relevant information (1 mark)</li> </ul> </li> </ul>	/1 /1
<ul style="list-style-type: none"> <li>Provides a logical conclusion (1 mark)</li> </ul>	/1
<ul style="list-style-type: none"> <li>Uses an authorised format to record all references               <ul style="list-style-type: none"> <li>uses an authorised format (1 mark)</li> <li>records all references (1 mark)</li> </ul> </li> </ul>	/1 /1
<b>Total - Report writing</b>	<b>/9</b>

<b>3. Complete food preservation tutorials</b>						
• Conducts experiments and records results for each of five tutorials (1 mark each)						/5
• For each tutorial	1	2	3	4	5	
○ analyses two effects of the preservation technique on the commodity being tested (1 mark each effect)						/10
○ explains the process by which the functional properties of foods are modified by the preservation technique to prevent food spoilage (1 mark)						/5
○ describes the effect of the preservation technique on nutrition (1 mark)						/5
○ justifies one economic and one product development implication of the use of each preservation technique by the hospitality industry (1 mark economic, 1 mark product development)						/10
○ describes one food safety issue involved in the production and one in the consumption of food preserved by each technique (1 mark production, 1 mark consumption)						/10
○ selects an appropriate recipe and process to demonstrate each preservation technique and maximize human and non-human resource use (1 mark selects, 1 mark demonstrates, 1 mark resource use)						/15
<b>Total – Complete food preservation tutorials</b>						<b>/60</b>
<b>TASK TOTAL</b>						<b>/90</b>
<b>CONVERT TO PERCENTAGE - 20%</b>						

**Teacher comment:**

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## Assessment Task 1 Part B: Unit 2B FSTH

### Task 1 Part B: Chef's Table

**Assessment type:** Production

**Outcomes:** Outcome 2: Developing food opportunities  
Outcome 3: Working in food environments

**Unit context:** Food processing systems to ensure food safety

**Task duration:** 4 weeks

**Task weighting:** 40% of unit total

#### Task 1 Part B: Chef's Table (85 marks - 40%)

Work individually and in small and large teams to plan and produce and evaluate a buffet, lunch function that meets the specified needs of a minimum of twenty guests. The menu will include three savoury and three dessert menu items. Each menu item will include a commodity preserved using a different preservation process as an ingredient in, or accompaniment to, the menu item. Record the planning in an event portfolio, demonstrate skills with food during function production and produce a written evaluation.

#### What you need to do:

##### 1. Planning – Event portfolio

- Work effectively in a class team to identify and survey the guests and determine their specified needs e.g. health, food allergy or intolerance issues. Record the results
- Individually select a main and a dessert course recipe that include preserved commodities
- Form small teams and evaluate the team recipe selections according to the effective use of human and non-human resources e.g. cost, equipment, time, guest specified needs
- Individually produce a PMI chart that evaluates the group menu items e.g. nutrition, use of preserved foods, maximisation of resources
- Effectively communicate and negotiate to finalise a small team two-course menu
- Allocate product trialing roles to all team members
- Individually produce a food order and production plan for team trialing of the menu
- Devise a HACCP plan by explaining one food handling practice, at each of five critical control points in the preparation, production, storage and service of the menu, that will ensure food safety
- Participate effectively in trialing the production and presentation of the menu items
- Work in small teams to conduct and record sensory evaluation of the two products
- Communicate and negotiate with other small teams to finalise a menu that suits the purpose of the Chef's Table function
- Work effectively in a class team, communicate and negotiate to identify production teams, team roles and allocate class members to teams for the function production
- Individually produce a food order and production plan for the entire function
- Produce an evaluation form to collect guest response to the menu selection, sensory properties of the menu items and service
- Individually produce a table menu itemising the complete menu and a buffet table card describing the dish you will produce.

## 2. Production – Skills with food

During product trialing or function production, demonstrate:

- Food preparation and presentation skills
  - selection and correct application of appropriate food preservation techniques
  - a high level of skill in the attractive plating of food
  - a very high standard of health and safety practices
  - implementation of a HACCP plan to manage food safety
  
- Mise-en-place
  - a very high level of kitchen mise-en-place skills OR
  - a very high level of restaurant mise-en-place skills
  
- Skills to manage large-scale productions
  - structured teamwork skills e.g. cooperation, leadership, flexibility
  - conflict resolution e.g. communication, problem solving, organisational skills
  
- Organisation of work using food orders and production plans
  - production of accurate food orders submitted on time
  - consistent production and following of production plans
  - constant modification of production plans.

## 3. Evaluation – Written evaluation

- Analyse guest response forms and evaluate two positive and two negative aspects of the feedback
- Evaluate the effectiveness of three food handling practices implemented to achieve food safety
- Analyse three relevant modifications to systems of work and predict the effect of each on the effectiveness of the production process.

What is required for assessment?	Due dates
<input type="checkbox"/> Event portfolio (resource evaluation, PMI chart, trial food order and production plan, trial sensory evaluation, guest specified needs, production food order and production plan, HACCP plan, guest evaluation form, table menu, buffet table card)	Week 14
<input type="checkbox"/> Attendance at the function planning and production lessons (absence to be explained in accordance with the school assessment policy)	Week 14
<input type="checkbox"/> Written evaluation	Week 14

## Marking key: Task 1 Part B: Unit 2B FSTH

Chef's Table	Maximum mark /85
<b>1. Planning – Event portfolio</b>	
<ul style="list-style-type: none"> <li>• Works effectively in a class team to identify guests and determine their specified needs. Records the results               <ul style="list-style-type: none"> <li>○ works effectively (1 mark)</li> <li>○ identifies guests (1 mark)</li> <li>○ determines and records guests specified needs (1 mark)</li> </ul> </li> </ul>	/1 /1 /1
<ul style="list-style-type: none"> <li>• Individually selects a main and a dessert course recipe that include preserved commodities (1 mark each course)</li> </ul>	/2
<ul style="list-style-type: none"> <li>• Forms small teams and evaluates the team recipe selections according to the effective use of human and non-human resources               <ul style="list-style-type: none"> <li>○ evaluates human resources (1 mark)</li> <li>○ evaluates non-human resources (1 mark)</li> </ul> </li> </ul>	/1 /1
<ul style="list-style-type: none"> <li>• Individually produces a PMI chart that evaluates the group menu items e.g. nutrition, use of preserved commodities, maximisation of resources               <ul style="list-style-type: none"> <li>○ produces a PMI chart (1 mark)</li> <li>○ evaluates nutrition (1 mark)</li> <li>○ evaluates the use of preserved commodities (1 mark)</li> <li>○ evaluates the maximisation of resources (1 mark)</li> </ul> </li> </ul>	/1 /1 /1 /1
<ul style="list-style-type: none"> <li>• Effectively communicates and negotiates to finalise a small team two-course menu (1 mark)</li> </ul>	/1
<ul style="list-style-type: none"> <li>• Allocates product trialing roles to all team members (1 mark)</li> </ul>	/1
<ul style="list-style-type: none"> <li>• Individually produces a food order and production plan for team trialing of the menu               <ul style="list-style-type: none"> <li>○ produces a food order (1 mark)</li> <li>○ produces a production plan (1 mark)</li> </ul> </li> </ul>	/1 /1
<ul style="list-style-type: none"> <li>• Devises a HACCP plan by explaining one food handling practice, at each of five critical control points in the preparation, production, storage and service of the menu, that will ensure food safety               <ul style="list-style-type: none"> <li>○ identifies five critical control points (1 mark each)</li> <li>○ explains one food handling practice at each of five control points (1 mark each)</li> </ul> </li> </ul>	/5 /5
<ul style="list-style-type: none"> <li>• Participates effectively in trialing the production and presentation of the menu items               <ul style="list-style-type: none"> <li>○ participates effectively (1 mark)</li> <li>○ trials production of menu items (1 mark)</li> <li>○ trials presentation of menu items (1 mark)</li> </ul> </li> </ul>	/1 /1 /1

<ul style="list-style-type: none"> <li>• Works in small teams to conduct and record sensory evaluation of the two products <ul style="list-style-type: none"> <li>○ conducts sensory evaluation (1 mark)</li> <li>○ records sensory evaluation (1 mark)</li> </ul> </li> </ul>	 /1 /1
<ul style="list-style-type: none"> <li>• Communicates and negotiates with other small teams to finalise a menu that suits the purpose of the Chef's Table function (1 mark)</li> </ul>	/1
<ul style="list-style-type: none"> <li>• Works effectively in a class team, communicates and negotiates to identify production teams, team roles and allocates class members to teams for the function production <ul style="list-style-type: none"> <li>○ works effectively in a class team (1 mark)</li> <li>○ communicates and negotiates (1 mark)</li> </ul> </li> </ul>	 /1 /1
<ul style="list-style-type: none"> <li>• Individually produces a food order and production plan for the entire function <ul style="list-style-type: none"> <li>○ produces a food order (1 mark)</li> <li>○ produces a production plan (1 mark)</li> </ul> </li> </ul>	 /1 /1
<ul style="list-style-type: none"> <li>• Produces an evaluation form to collect guest response to the menu selection, sensory properties of the menu items and service <ul style="list-style-type: none"> <li>○ menu selection (1 mark)</li> <li>○ sensory properties (1 mark)</li> <li>○ service (1 mark)</li> </ul> </li> </ul>	 /1 /1 /1
<ul style="list-style-type: none"> <li>• Individually produces a table menu itemising the complete menu and a buffet table card describing the dish you will produce <ul style="list-style-type: none"> <li>○ produces a table menu (1 mark)</li> <li>○ produces a buffet table card (1 mark)</li> </ul> </li> </ul>	 /1 /1
<b>Total – Planning</b>	<b>/40</b>

2. Production – Skills with food				Marks awarded
1 = poor, 2 = satisfactory, 3 = very good				
• <i>Food preparation and presentation skills</i>				
○ selection and correct application of appropriate food preservation techniques	1	2	3	
○ a high level of food presentation skills	1	2	3	
○ a very high standard of health and safety practices	1	2	3	
○ implementation of a HACCP plan to achieve food safety	1	2	3	
• <i>Mise-en-place</i>				
○ a very high level of kitchen mise-en-place skills	1	2	3	
<b>OR</b>				
○ a very high level of restaurant mise-en-place skills	1	2	3	
• <i>Skills to manage large-scale productions</i>				
○ structured teamwork skills e.g. cooperation, leadership, flexibility	1	2	3	
○ conflict resolution e.g. communication, problem solving, organisational skills	1	2	3	
• <i>Organisation of work using food orders and production plans</i>				
○ production of accurate food orders submitted on time	1	2	3	
○ consistent production and following of production plans	1	2	3	
○ constant modification of production plans	1	2	3	
<b>Total – Production</b>				<b>/30</b>

Description of marking criteria	Marks allocated	Marks awarded
<b>3. Evaluation – Written evaluation</b>		
<ul style="list-style-type: none"> <li>• <i>Analyses guest response forms and evaluates two positive and two negative aspects of the feedback</i> <ul style="list-style-type: none"> <li>○ detailed analysis of responses and evaluation of two positive and two negative aspects</li> <li>○ satisfactory analysis of responses and evaluation of two positive and two negative aspects</li> <li>○ detailed analysis of responses and evaluation of one positive and one negative aspect</li> <li>○ satisfactory analysis of responses and evaluation of one positive and one negative aspect</li> <li>○ limited evaluation of responses and evaluation of one positive and one negative aspect</li> </ul> </li> </ul>	5  4  3  2  1	
<ul style="list-style-type: none"> <li>• <i>Evaluates the effectiveness of three food handling practices implemented to achieve food safety</i> <ul style="list-style-type: none"> <li>○ clear, detailed evaluation of the effectiveness of three food handling practices</li> <li>○ satisfactory analysis of three food handling practices</li> <li>○ clear, detailed evaluation of the effectiveness of two food handling practices</li> <li>○ satisfactory analysis of two food handling practices</li> <li>○ brief evaluation of one food handling practice</li> </ul> </li> </ul>	5  4  3  2  1	
<ul style="list-style-type: none"> <li>○ <i>Analyses three relevant modifications to systems of work and predicts the effect of each on the effectiveness of the production process</i> <ul style="list-style-type: none"> <li>○ thorough analysis of three relevant modifications and logical prediction of the effect on the production process</li> <li>○ satisfactory analysis of three relevant modifications and clear prediction of the effect on the production process</li> <li>○ thorough analysis of two relevant modifications and logical prediction of the effect on the production process</li> <li>○ satisfactory analysis of two relevant modifications and clear prediction of the effect on the production process</li> <li>○ limited analysis of one modification and limited prediction of the effect on the production process</li> </ul> </li> </ul>	5  4  3  2  1	
<b>Total - Evaluation</b>	<b>15</b>	
<b>TASK TOTAL</b>	<b>85</b>	<b>/85</b>
<b>CONVERT TO PERCENTAGE - 40%</b>		

**Teacher comment:**

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## Assessment Task 2: Unit 2B FSTH

### Task 2: Investigate the use of value-added commodities by the hospitality industry

**Assessment type:** Investigation

**Outcomes:** Outcome 1: Understanding food materials  
Outcome 4: Food in society

**Unit context:** Food processing systems to ensure food safety

**Task duration:** 2 weeks

**Task weighting:** 10% of unit total

### Task 2: Investigate the use of value-added commodities by the hospitality industry (70 marks - 10%)

Investigate the use of two value-added commodities in the fast food hospitality industry. Evaluate the consequences to the health, environment and economy of communities. Produce a report of your findings.

#### What you need to do:

##### 1. Investigation

- Define the term 'value-added'
- Conduct research into the production of fries and soft serve ice cream by the fast food hospitality industry. Gather a range of information from three sources to analyse e.g. access websites, visit restaurants, collect menus, conduct interviews
- Describe the form in which fries are commonly purchased for use by fast food restaurants e.g. the commodity, the storage technique, the packaging
- Access the website [www.mixph.com/?p=318](http://www.mixph.com/?p=318) > illustrated flow of processing potato and obtain a copy of the flow diagram of processing potatoes into fries
- Identify and explain three processing techniques designed to prevent food spoilage
- Identify and explain two processing techniques designed to improve sensory properties
- Identify and explain how three processing techniques modify nutrition
- Describe two additional value-adding processes applied by the restaurant to bring the fries to the consumer
- Access the website [http://en.wikipedia.org/wiki/Soft\\_serve](http://en.wikipedia.org/wiki/Soft_serve) > pre-mix and obtain a copy of the article 'Soft serve'
- Describe three forms in which the soft serve pre-mix can be purchased by restaurants
- Explain one food spoilage risk when processing each form of the pre-mix
- Explain two processing techniques that affect sensory properties
- Distinguish the difference in the fat content of soft serve and ice cream
- Describe two additional value-adding processes applied by the restaurant to bring the soft serve to the consumer
- Analyse three reasons why fast food restaurants would use value-added rather than fresh commodities to prepare menu items
- Predict three specified consumer needs that cause fast food restaurants to use value-added rather than fresh commodities
- Analyse two consequences on each of the health, environment and economy of communities of the use of value-added products by the fast food hospitality industry
- Consider the ethical responsibility of the fast food hospitality industry to produce only healthy foods. Evaluate four issues.

### 3. Report writing

- Consistently use relevant, correctly spelt terminology
- Include an introduction that clearly outlines the investigation issue
- Analyse and organise a range of accurate and relevant information
- Provide a logical conclusion
- Use an authorised format to record all references.

What is required for assessment?	Due date
<input type="checkbox"/> Report	Week 10

## Marking key Task 2: Unit 2B FSTH

Investigate the use of value-added commodities by the hospitality industry	Maximum mark /70
<b>1. Investigation</b>	
<ul style="list-style-type: none"> <li>• Defines the term 'value-added' (1 mark)</li> </ul>	/1
<ul style="list-style-type: none"> <li>• Conducts research into the production of fries and soft serve ice cream by the fast food hospitality industry. Gathers a range of information from three sources to analyse               <ul style="list-style-type: none"> <li>○ conducts research (1 mark)</li> <li>○ gathers a range of information from three sources (1 mark each)</li> </ul> </li> </ul>	/1 /3
<ul style="list-style-type: none"> <li>• Describes the form in which fries are commonly purchased for use by fast food restaurants               <ul style="list-style-type: none"> <li>○ describes the commodity (1 mark)</li> <li>○ describes the storage technique (1 mark)</li> <li>○ describes the packaging (1 mark)</li> </ul> </li> </ul>	/1 /1 /1
<ul style="list-style-type: none"> <li>• Accesses the website and obtains a copy of the flow diagram of processing potatoes into fries (1 mark)</li> </ul>	/1
<ul style="list-style-type: none"> <li>• Identifies and explains three processing techniques designed to prevent food spoilage               <ul style="list-style-type: none"> <li>○ identifies three processing techniques (1 mark each)</li> <li>○ explains three processing techniques (1 mark each)</li> </ul> </li> </ul>	/3 /3
<ul style="list-style-type: none"> <li>• Identifies and explains two processing techniques designed to improve sensory properties               <ul style="list-style-type: none"> <li>○ identifies three processing techniques (1 mark each)</li> <li>○ explains three processing techniques (1 mark each)</li> </ul> </li> </ul>	/3 /3
<ul style="list-style-type: none"> <li>• Identifies and explains how three processing techniques modify nutrition               <ul style="list-style-type: none"> <li>○ identifies three processing techniques (1 mark each)</li> <li>○ explains how each modifies nutrition (1 mark each)</li> </ul> </li> </ul>	/3 /3
<ul style="list-style-type: none"> <li>• Describes two additional value-adding processes applied by the restaurant to bring the fries to the consumer (1 mark each)</li> </ul>	/2
<ul style="list-style-type: none"> <li>• Accesses the website and obtains a copy of the article 'Soft serve' (1 mark)</li> </ul>	/1
<ul style="list-style-type: none"> <li>• Identifies and describes three forms in which the soft serve pre-mix can be purchased by restaurants               <ul style="list-style-type: none"> <li>○ identifies three forms (1 mark each)</li> <li>○ describes three forms (1 mark each)</li> </ul> </li> </ul>	/3 /3
<ul style="list-style-type: none"> <li>• Explains one food spoilage risk when preparing each form of the pre-mix (1 mark each of three risks)</li> </ul>	/3
<ul style="list-style-type: none"> <li>• Explains two processing techniques that affect sensory properties (1 mark each technique)</li> </ul>	/2
<ul style="list-style-type: none"> <li>• Distinguishes the difference in the fat content of soft serve and ice cream (1 mark each)</li> </ul>	/2
<ul style="list-style-type: none"> <li>• Describes two additional value-adding processes applied by the restaurant to bring the soft serve to the consumer (1 mark each process)</li> </ul>	/2

<ul style="list-style-type: none"> <li>• Analyses three reasons why fast food restaurants would use value-added rather than fresh commodities (1 mark each reason)</li> </ul>	/3
<ul style="list-style-type: none"> <li>• Predicts three specified consumer needs that cause fast food restaurants to use value-added rather than fresh commodities (1 mark each)</li> </ul>	/3
<ul style="list-style-type: none"> <li>• Analyses two consequences on each of the health, environment and economy of communities of the use of value-added products by the fast food hospitality industry               <ul style="list-style-type: none"> <li>○ analyses two consequences on health</li> <li>○ analyses two consequences on environment</li> <li>○ analyses two consequences on economy</li> </ul>               (1 mark for each consequence in each category)             </li> </ul>	/2 /2 /2
<ul style="list-style-type: none"> <li>• Considers the ethical responsibility of the fast food hospitality industry to produce only healthy foods. Evaluates four issues (1 mark each)</li> </ul>	/4
<b>Total - Investigation</b>	<b>/61</b>
<b>2. Report writing</b>	
<ul style="list-style-type: none"> <li>• Consistently uses relevant, correctly spelt terminology               <ul style="list-style-type: none"> <li>○ consistently uses relevant terminology</li> <li>○ consistently spells relevant terminology correctly (1 mark each)</li> </ul> </li> </ul>	/1 /1
<ul style="list-style-type: none"> <li>• Includes an introduction that clearly outlines the investigation issue               <ul style="list-style-type: none"> <li>○ includes an introduction</li> <li>○ clearly outlines the investigation issue (1 mark each)</li> </ul> </li> </ul>	/1 /1
<ul style="list-style-type: none"> <li>• Analyses and organises a range of accurate and relevant information               <ul style="list-style-type: none"> <li>○ analyses accurate and relevant information</li> <li>○ organises accurate and relevant information (1 mark each)</li> </ul> </li> </ul>	/1 /1
<ul style="list-style-type: none"> <li>• Provides a logical conclusion (1 mark)</li> </ul>	/1
<ul style="list-style-type: none"> <li>• Uses an authorised format to record all references               <ul style="list-style-type: none"> <li>○ uses an authorised format</li> <li>○ records all references (1 mark each)</li> </ul> </li> </ul>	/1 /1
<b>Total - Report writing</b>	<b>/9</b>
<b>TASK TOTAL</b>	<b>/70</b>
<b>CONVERT TO PERCENTAGE – 10%</b>	

**Teacher comment:**

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## Assessment Task 3: Unit 2B FSTH

### Task 3: Current issues

**Assessment type:** Response

**Outcomes:** Outcome 1: Understanding food materials  
Outcome 4: Understanding food in society

**Unit context:** Food processing systems to ensure food safety

**Task duration:** 5 weeks

**Task weighting:** 10% of unit total

#### Task 3: Current issues (40 marks - 10 %)

Produce written responses that review each of three media articles related to current issues that impact on the hospitality industry. Produce a Current Issues portfolio. Prepare and present a ten minute oral presentation in response to one reviewed article.

#### What you need to do:

##### 1. Current issues portfolio

- Select and provide copies of three media articles related to three, different, current issues that impact on the hospitality industry e.g. nutrition of restaurant food, innovative food products or services that meet specified consumer needs, food safety in the hospitality industry, food additives, ethical promotional strategies
- Explain the current issue discussed in each article
- Evaluate the balance of opinions expressed in each article e.g. supporting or opposing viewpoints
- Analyse the impact of each issue on the hospitality industry
- Predict the effect of each issue on the health, environment and economy of communities
- Predict the impact of the articles on hospitality industry consumer and enterprise relationships e.g. credibility of the source, use of persuasive language, effect on profits.

##### 2. Oral presentation

- Select one reviewed article to respond to orally
- Provide an introduction that clearly defines the response issue
- Accurately use relevant terminology
- Organise and analyse a range of accurate and relevant information that supports your response to the article
- Apply knowledge of current issues, trends and innovation in food science and the hospitality industry that respond to the article
- Provide a logical conclusion that includes two recommendations in response to the article
- Speak clearly and confidently, address the audience, keep to the time limit.

What is required for assessment?	Due dates
<input type="checkbox"/> Current issues portfolio (copies of each article, response to each article)	Week 6
<input type="checkbox"/> Oral presentation	Week 6



<ul style="list-style-type: none"> <li>• <i>Predicts the effect of each issue on the health, environment and economy of communities</i> <ul style="list-style-type: none"> <li>○ logical prediction of the effect of each issue</li> <li>○ satisfactory prediction of the effect of each issue</li> <li>○ limited prediction of the effect of each issue</li> <li>○ limited prediction of the effect of an issue</li> </ul> </li> </ul>	4 3 2 1	
<ul style="list-style-type: none"> <li>• <i>Predicts the impact of the articles on consumer and enterprise relationships in the hospitality industry</i> <ul style="list-style-type: none"> <li>○ logical prediction of the impact of the articles</li> <li>○ satisfactory prediction of the impact of the articles</li> <li>○ limited prediction of the impact of the articles</li> </ul> </li> </ul>	3 2 1	
<b>Total – Current issues portfolio</b>	<b>/25</b>	
<b>Oral presentation</b>		
<ul style="list-style-type: none"> <li>• Selects one reviewed article to respond to orally</li> </ul>	/1	
<ul style="list-style-type: none"> <li>• Provides an introduction that clearly defines the response issue <ul style="list-style-type: none"> <li>○ provides an introduction</li> <li>○ clearly outlines the response issue (1 mark each)</li> </ul> </li> </ul>	/1 /1	
<ul style="list-style-type: none"> <li>• Accurately uses relevant terminology (1 mark)</li> </ul>	/1	
<ul style="list-style-type: none"> <li>• Organises and analyses a range of accurate and relevant information that supports your response to the article <ul style="list-style-type: none"> <li>○ organises accurate and relevant information</li> <li>○ analyses accurate and relevant information (1 mark each)</li> </ul> </li> </ul>	/1 /1	
<ul style="list-style-type: none"> <li>• Applies knowledge of current issues, trends and innovation in food science and the hospitality industry to the response to the article (1 mark each) <ul style="list-style-type: none"> <li>○ applies knowledge of current issues in the hospitality industry</li> <li>○ applies knowledge of trends in the hospitality industry</li> <li>○ applies knowledge of innovation in the hospitality industry</li> </ul> </li> </ul>	/1 /1 /1	
<ul style="list-style-type: none"> <li>• Provides a logical conclusion that includes two recommendations that respond to the article <ul style="list-style-type: none"> <li>○ provides a logical conclusion (1 mark)</li> <li>○ includes two recommendations (1 mark each)</li> </ul> </li> </ul>	/1 /2	
<ul style="list-style-type: none"> <li>• Speaks clearly and confidently, addresses the audience, keeps to the time limit <ul style="list-style-type: none"> <li>○ speaks clearly and confidently</li> <li>○ addresses the audience</li> <li>○ keeps to the time limit (1 mark each)</li> </ul> </li> </ul>	/1 /1 /1	
<b>Total – Oral presentation</b>	<b>/15</b>	
<b>TASK TOTAL</b>	<b>/40</b>	
<b>CONVERT TO PERCENTAGE – 10%</b>		

**Teacher comment:**

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## Assessment Task 4: Unit 2B FSTH

### Task 4: Exam (not provided)

**Assessment type:** Response

**Outcomes:** Outcome 1: Understanding food materials  
Outcome 2: Developing food opportunities  
Outcome 3: Working in food environments  
Outcome 4: Understanding food in society

**Unit context:** Food processing systems to ensure food safety

**Task duration:** 2 hours

**Task weighting:** 20% of unit total

### Task 4: Exam (100 marks – 20%)

Complete a two hour exam under exam conditions.

#### What you need to do:

Section	Suggested working time	Number of questions available	Number of questions to be attempted	% of paper	Total possible marks
One: Multiple-choice	20 minutes	20	20	20%	20
Two: Short response	50 minutes	5	5	50%	50
Three: Extended answer	25 minutes	1	1	15%	15
Four: Context specific extended answer	25 minutes	2	1	15%	15
				Total marks	100

(Adapted: Reference: Curriculum Council (2008). *FOOD SCIENCE AND TECHNOLOGY DRAFT SAMPLE EXAMINATION STAGE 2*)

What is required for assessment?	Due date
<input type="checkbox"/> Attendance at the exam (absence to be explained in accordance with the school assessment policy)	Week 15

# TUTORIALS

## TUTORIAL 1

### **Preservation and physical and chemical properties of foods: Removal of moisture – Dehydration**

Dehydration is the process of removing or reducing the moisture content of foods.

Microorganisms that cause food spoilage need moisture to survive, therefore removing or reducing the moisture in foods creates an environment where microorganisms cannot multiply and cause food spoilage.

Dehydration that reduces moisture content can be achieved through the addition of salt or sugar that draw moisture from the cells in foods. The salt or sugar dissolve in the moisture and create a concentrated environment that is unsuitable for the growth of microorganisms. Dehydration that removes moisture is achieved through the application of heat or air.

Dehydration can be achieved through drying foods in the sun, the air, an oven or a dehydrator. Dehydrated food products are lighter and less bulky than the natural products and are more easily transported and stored. They also have an extended shelf life.

#### **Experiment**

##### **Aim:**

To observe and record results and draw conclusions about the changes to the physical and sensory properties of fruit when it is dehydrated.

##### **Method:**

- Each group of four students will need:
  - 4 large Granny Smith apples
  - 1 cup lemon juice
  - 2 teaspoons of sodium bisulfite
  - 1 tablespoon of pure crystalline ascorbic acid
  - peeler, corer, paring knife, cutting board
  - 4 small white plates
  - 2 small saucepans with lids
  - clock or timer to record dehydration time
  - dehydrator
- Prepare apples. Peel and core, cut into slices or rings 0.5 cm thick. Peelings may be left on; however they tend to toughen during dehydration  
Each group of students will conduct the following five experiments:
  1. Untreated:  
Prepare as described above, leave exposed to the air and record physical and sensory properties.
  2. Dehydrated without pre-treatment:  
Prepare as above, dehydrate and record physical and sensory properties.

- Pre-treat apples:  
This process prevents discolouration through oxidation, gives a more pliable texture and helps retain vitamins A and C.
3. Sodium Bisulfite:  
Dissolve 2 teaspoons of sodium bisulfite in 1.1 litres of water and add cut fruit. Slices of fruit should be soaked for no more than 10 minutes. Drain and dehydrate.  
(CAUTION: sodium bisulfite can affect people with asthma, allergies or other respiratory problems. DO NOT EAT THESE PIECES OF APPLE).
  4. Ascorbic acid:  
Dissolve one tablespoon of pure crystalline ascorbic acid in 1.1 litres of cold water. Add cut fruit and soak for a few minutes; remove with a slotted spoon; drain well and dehydrate.
  5. Lemon juice:  
Use one cup lemon juice to 1.1 litres of water. Soak the fruit for no more than ten minutes. Drain and dehydrate (lemon juice is only one-sixth as effective as ascorbic acid).
- To dehydrate apples using a dehydrator:  
The temperature should be 150°C for 2-3 hours then reduced to 130°C until fruit is dry.

**Tips & Warnings:**

- using a dehydrator is more energy efficient than using an oven
- arrange the fruit in a single layer on trays to make for easier dehydration
- the fruit can be used to make fruit leather. Puree the fruit. Pour the fruit puree about ½ cm deep on special fruit leather drying sheets or drying trays lined with plastic wrap. Dry at 135°C until pliable. The centre should be dry.

**Results:**

- Use food industry specific terminology to record results in the table.

	<b>Size</b> (mm, draw)	<b>Shape</b> (illustrate and describe e.g. defined lines and edges. rounded, sharp)	<b>Colour</b> (describe e.g. pale yellow, green chlorophyll, more yellow, less green, other colour?)	<b>Flavour</b> (and aftertaste e.g. crisp, sour, bland)	<b>Dehydration time</b> (minutes)
<b>1</b> Untreated	Length: Width: Height: Weight:				Zero minutes
<b>2</b> Dehydrated without pre-	Length: Width:				

treatment	Height: Weight:				
<b>3</b> Pre-treated with lemon juice, dehydrated	Length: Width: Height: Weight:				
<b>4</b> Pre-treated with ascorbic acid, dehydrated	Length: Width: Height: Weight:				
<b>5</b> Pre-treated with sodium bisulfate, dehydrated	Length: Width: Height: Weight:				

NOTE: After pre-treating, the apple slices may be sprinkled with cinnamon or flavoured gelatine crystals to improve sensory properties

**Conclusions:**

- Analyse two effects of dehydration on the physical properties of apple

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 \_\_\_\_\_  
 \_\_\_\_\_

2 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
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- Explain the process by which the functional properties of foods are modified by the dehydration processing technique to prevent food spoilage

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- Describe the effect of dehydration on the nutrition of fruit

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- Justify one economic and one product development implication of the use, by the hospitality industry, of products preserved by dehydration  
Economic

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Product development

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- Describe one food safety issue involved in the production and one in the consumption of dehydrated foods

Production

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Consumption

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## Other dehydration processes

- Sun drying:  
This method takes 3-4 hot days (37°C). Be sure to cover fruit with screen or cheese cloth to keep away insects. Bring in or cover at night to keep moisture from collecting. To "pasteurize" sun dried fruit in order to prevent contamination from insects, freeze for 28-72 hours.  
Foods suitable for dehydration by this process include fruit, fish and meat.
- Oven drying:  
This is generally the fastest method. The temperature should be no higher than 140°C, leave the door ajar; place a fan so it blows across the opening and carries the moisture away.  
Foods suitable for dehydration by this process include tomatoes and pineapple.
- Air drying:  
Commercial air drying is used to dehydrate foods such as milk and eggs. Foods are placed on racks and moved through a tunnel with hot air blowing thorough it.  
Domestic air drying is achieved by hanging the items to be dried in bunches in a dry, shady place until the moisture in the food has been removed  
Foods suitable for dehydration by this process include herbs, chillies and tomatoes.
- Freeze drying:  
This is a commercial process where the food is frozen before dehydration.  
Instant coffee, tea leaves and milk are examples of foods processed by this method.

### Practical:

- Investigate the dehydration methods summarised above
- Select an appropriate processing technique and dehydrate herbs, onions and tomatoes
- The process selected must maximize the use of human and non-human resources e.g. time, skills, equipment
- The dehydrated products will be used in bread making.

### Teacher comment:

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# RECIPE

## Tutorial 1: Properties of food: Preservation - Dehydration

COURSE: Entrée or main - antipasta	NAME OF DISH: Dried tomatoes ,onions, herbs	No. portions: 4
		Serving dishes required:
		Garnish:
Ingredients	Method	Equipment
4 roma tomatoes 1 spanish onion rock salt  bunch herbs	<ol style="list-style-type: none"> <li>1. Set oven to 100°C</li> <li>2. Remove core from tomatoes and cut into 8</li> <li>3. Peel onion and cut into 8 wedges</li> <li>4. Place on foil covered tray and sprinkle with rock salt</li> <li>5. Place in low oven for several hours until tomatoes reach desired dryness</li> <li>6. Store in airtight container in fridge for up to a week or place in olive oil with garlic and chilli.</li> </ol> <ol style="list-style-type: none"> <li>1. Wash, remove stems and place on paper towel</li> <li>2. Place in microwave, on medium high Check at 1 minute intervals, until dry.</li> </ol>	

## TUTORIAL 2

### Preservation and the physical properties of foods: Addition of chemicals - Salt

The process of preservation by the addition of salt produces an environment that retards the growth of microorganisms that cause food spoilage. The process of osmosis causes water to move from a solution of low concentration (the cells of the microorganisms), to one of higher concentration (the salt).

The amount of salt added will determine how long the growth of microorganisms is retarded or whether it is destroyed. This is also dependent on the combination of other methods of preservation used e.g. refrigeration, dehydration. Sugar works in the same way to prevent food spoilage.

Salt has been added to food as a preservative since biblical times. It is used particularly with savoury foods, vegetables, meat, cheese, and in some cultures, fruit. Salt can be added to food directly or can be added in the form of a solution (brine) which alters the availability of water in the food.

The salting of raw meats such as beef, pork and lamb, in salt brine is a time honoured method of preservation. Corned beef is preserved this way and salting was used during long sea voyages to preserve meat. The process is not difficult but it takes about three weeks to complete.

#### Experiment 1

##### Aim:

To observe and record results and draw conclusions about the changes to the physical properties of meat when it is salted and cooked.

##### Method:

- Each group of four students will need:
  - 2 x 250 gm pieces of corned silverside (treated, 2 even portions)
  - 1 x 200 gm untreated piece of beef silverside
  - 3 crockpots, slow cookers or large saucepans

Seasonings – add to each sample:

juice and grated rind of 2 oranges

4 bay leaves

4 Tb brown sugar

2 t dried mustard

2 t peppercorns

1. Weigh meat and record
2. Place untreated beef into a crockpot, slow cooker or saucepan. Cover with cold water, add seasonings and bring to the boil, reduce heat to simmer for 3-4 hours. Cool out of cooking liquid
3. Place one piece of corned beef (silverside) into a crockpot, slow cooker or saucepan. Cover with cold water, add seasonings and bring to the boil. Reduce heat to simmer for 3-4 hours. Cool out of cooking liquid

4. Place the second piece of corned beef (silverside) into a crockpot, slow cooker or saucepan. Cover with boiling water, add seasonings and bring to the boil. Reduce heat to simmer for 3-4 hours. Cool out of cooking liquid
5. Cut a piece from each and conduct sensory testing, (remainder is for practical session) record the results in table below.

**Results:**

- Use food industry specific terminology to record the results in the table

Sample	Weight	Colour	Flavour	Texture
Untreated beef	Uncooked			
	Cooked			
Cold water corned beef	Uncooked			
	Cooked			
Boiling water corned beef	Uncooked			
	Cooked			

**Conclusions:**

- Analyse two effects of salting on the physical properties of the meat

1 \_\_\_\_\_  
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 \_\_\_\_\_  
 \_\_\_\_\_

2 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- Explain the process by which the functional properties of foods are modified by the processing technique of salting to prevent food spoilage

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- Describe the effect of the salting process on the nutrition of meat

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- Justify one economic and one product development implication of the use, by the hospitality industry, of products preserved by the addition of chemicals

Economic

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Product development

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- Describe one food safety issue involved in the production and one in the consumption of foods preserved by the addition of chemicals

Production

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Consumption

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**Practical:**

- Investigate recipes for preserving products by the addition of chemicals e.g. salt or sugar
- Select appropriate recipes and processing techniques and preserve fruit or vegetables
- The processing technique selected must maximize the use of human and non-human resources e.g. time, money, equipment, skills
- The preserved products may be stored for use in Task 1 Part B.

**Teacher comment:**

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# RECIPE

## Tutorial 2: Properties of food: Preservation - Addition of chemicals - Salt

COURSE: Accompaniment	NAME OF DISH: Olives	No. portions: 2	
		Serving dishes required:	
		Garnish:	
Ingredients	Method	Equipment	
500 gms black olives 375 ml 10% brine solution 125 ml vinegar	<ol style="list-style-type: none"> <li>1. Make brine using 400 mls water and 40 gms salt</li> <li>2. Heat to 70-80°C to dissolve salt</li> <li>3. Combine 375 ml of brine with vinegar</li> <li>4. Wash olives and place in sterilised jar. Fill with hot brine solution</li> <li>5. Seal with lid while hot to form vacuum seal</li> <li>6. Leave to cure for 6 weeks.</li> </ol> <p><b>Variation -</b> Place garlic cloves or chillies in jar to flavour olives.</p>	500 ml jar with lid	

# RECIPE

## Tutorial 2: Properties of food: Preservation – Addition of chemicals – Sugar

(Ref: <http://www.australiangoodtaste.com.au/recipes/>)

COURSE: Accompaniment	NAME OF DISH: Red Onion Jam	No. Portions: 6
		Serving dishes required: Sterilised glass jar
		Garnish:
Ingredients	Method	Equipment
<p>80 gms butter</p> <p>5 medium (about 900 gms) red onions, thinly sliced</p> <p>pinch of salt</p> <p>100 gms (<math>\frac{1}{2}</math> cup, firmly packed) brown sugar</p> <p>185 ml (<math>\frac{3}{4}</math> cup) red wine vinegar</p>	<ol style="list-style-type: none"> <li>1. Prepare onions</li> <li>2. Melt the butter in a large saucepan over medium- high heat until foaming. Add onion and salt, cook, stirring, for 15 minutes or until soft</li> <li>3. Add sugar and cook, stirring, for 5 minutes or until sugar dissolves</li> <li>4. Add red wine vinegar and bring to the boil</li> <li>5. Reduce heat to low and simmer, uncovered, for 20 minutes or until mixture thickens</li> <li>6. Remove from heat and serve immediately.</li> </ol> <p>Notes &amp; tips</p> <p>Onion jam will keep for up to three days. Cool to room temperature and store in an airtight container in the fridge. Onion jam is great served with grilled sausages and mashed potato.</p>	<p>Large saucepan</p>

# RECIPE

## Tutorial 2: Properties of food: Preservation – Addition of chemicals – Sugar

(Ref: <http://www.australiangoodtaste.com.au/recipes/>)

COURSE: Accompaniment	NAME OF DISH: Roast Capsicum and Chilli Jam	No. Portions: 2	
		Serving dishes required:	
		Garnish:	
Ingredients	Method	Equipment	
<p>1 kg red capsicums</p> <p>3-4 chillies optional</p> <p>125 ml (<math>\frac{1}{2}</math>cup) white wine vinegar</p> <p>450 gms (2 cups) white sugar</p> <p>2 Tbs jam setting mixture</p> <p>2 tsp finely chopped chilli</p>	<ol style="list-style-type: none"> <li>1. Preheat oven to 180°C. Place the capsicums on a baking tray. Roast in oven for 1 hour, turn once. Set aside to cool slightly. Cover with plastic wrap. Set aside to cool completely</li> <li>2. Peel the skin from the capsicums and remove the membrane and seeds. Place the flesh in the bowl of a food processor and process until smooth. Transfer to a large saucepan. Add the vinegar and sugar and stir to combine. Place the pan over low heat and stir until the sugar dissolves</li> <li>3. Add the jam setting mixture and chilli to the capsicum mixture. Increase the heat to medium and bring to the boil. Cook, stirring occasionally, for 5 minutes. Set aside until the bubbles subside. Use a large metal spoon to skim any froth from the surface of the mixture</li> <li>4. Spoon the hot jam mixture into clean, dry jars and seal. Invert for 2 minutes then turn jars upright. Set aside to cool</li> <li>5. Label jam: 'Store unopened in a cool, dark place out of direct sunlight for up to six months. Once opened, refrigerate for up to six weeks'</li> </ol>	Large saucepan	

### TUTORIAL 3

#### **Preservation and physical and chemical properties of foods: Altering Temperature – Freezing**

Freezing is the process of reducing the temperature of food to below  $-18^{\circ}\text{C}$ . Microorganisms that cause food spoilage need warmth ( $5-60^{\circ}\text{C}$ ) to multiply rapidly, therefore reducing the temperature of the foods creates an environment where microorganisms cannot multiply and cause food spoilage.

Freezing reduces the temperature of food and:

- stops or reduces enzyme reactions in the food however, enzymes can still be slightly active even at extremely low temperatures. This can be reduced by pre-treating the food e.g. blanching fruit or vegetables, removing excess air from packaging
- microorganism growth is retarded and in some cases destroyed

The properties of defrosted foods are determined by treatment before and during the freezing process. Food should be placed in the freezer in appropriate packaging, preferably in a cool state, for it to defrost in optimum condition.

The speed of the freezing process will determine the size of the ice crystals that form in the food. The critical point is the time the food spends between  $0$  and  $-5^{\circ}\text{C}$ . A short time results in the formation of small crystals, a longer period at this temperature results in the formation of larger crystals. Larger crystals cause damage to the structure of the food. This also affects the shelf life of the food.

Frozen food products remain the same weight as the natural products. They need to be transported under temperature controlled conditions and stored correctly in the freezer at  $-18^{\circ}\text{C}$ . Most domestic freezers have a shelf life panel on the interior of the freezer to indicate recommended storage time.

#### **Experiment**

##### **Aim:**

To observe and record results and draw conclusions about the changes to the physical and sensory properties of meat when it is frozen.

##### **Method:**

- Each group of four students will need:
  - 1 x piece beef steak, frozen
  - 1 x piece beef steak, defrosted in fridge 24 hours
  - 1 x piece beef steak, at room temperature
  - oil
  - scales
  - oven tray
  - glad bake
  - large fry pan

1. Preheat a large fry pan (cook all in the one pan so the temperature is consistent)
2. Place the steaks in the preheated, oiled fry pan. Cook for 3-4 minutes on each side, only turn once. ALL STEAKS MUST BE COOKED FOR THE SAME LENGTH OF TIME
3. Compare the physical and sensory properties of each sample with the control. The fibrous structure can be evaluated by pulling the fibres apart. The texture is best evaluated by tasting. Record the results in table below:

**Results:**

- Use food industry specific terminology to record the results in the table

For texture, flavour and overall quality rank as follows:  
Score each criterion with a number

(3 = highly palatable, 2 = palatable, 1 = unpalatable)

Sample	Weight before and after cooking	Colour before and after cooking	Texture tenderness, fibrous structure	Flavour and odour	Overall quality	Physical properties after cooking
Frozen	Before  After	Before  After				
Fridge thawed	Before  After	Before  After				
Room temperature	Before  After	Before  After				

**Conclusions:**

- Analyse two effects of freezing on the physical properties of the meat

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2 \_\_\_\_\_  
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- Explain the process by which the functional properties of foods are modified by the processing technique of freezing to prevent food spoilage

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- Describe the effect of freezing on the nutrition of meat

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- Justify one economic and one product development implication of the use of freezing by the hospitality industry

Economic

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Product development

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- Describe one food safety issue involved in the production and one in the consumption of frozen foods

Production

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Consumption

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**Practical:**

- Investigate recipes for producing a frozen dessert product
- Select appropriate recipes and processing techniques and produce a frozen dessert product
- The recipes selected must maximize the use of human and non-human resources e.g. time, money, equipment, skills
- The frozen products may be stored for use in Task 1 Part B.

**Teacher comment:**

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# RECIPE

## Tutorial 3: Properties of food: Preservation - Altering temperature

(Ref, Adapted from: Hay, D. (2003). *Donna Hay Modern Classics Book 2*. Sydney: Harpercollins Publishers

COURSE: Dessert	NAME OF DISH: Ice cream	No. portions: 2 x 250 mls
		Serving dishes required: Ice cream bowl
		Garnish:
Ingredients	Method	Equipment
$\frac{1}{2}$ cup milk 1 cup cream 3 egg yolks $\frac{1}{3}$ cup caster sugar $\frac{1}{2}$ vanilla pod split and scraped	<ol style="list-style-type: none"> <li>Place milk, cream and vanilla bean in saucepan and warm over medium heat DO NOT BOIL, set aside to cool. Remove vanilla bean</li> <li>Place sugar and eggs in a small bowl and whisk until thick and creamy</li> <li>Slowly pour milk mixture over eggs whisking all the time to combine</li> <li>Pour the mixture back into the saucepan and stir with a wooden spoon, over low heat, until the mixture coats the back of the spoon, about 4 minutes</li> <li>Set aside to cool</li> <li>Place in ice cream maker following manufacture's instructions or place in shallow metal dish in freezer. Leave for an hour until it starts to set around the edges. Then beat with an electric beater. Do this about 4 times until the ice cream is 'scoopable'.</li> </ol>	Saucepan Wooden spoon Whisk Ice cream maker

## TUTORIAL 4

### Preservation and physical and chemical properties of foods: Altering pH

Altering the pH is the process involved in pickling or curing food. Microorganisms need a neutral environment to multiply rapidly, therefore altering the pH in foods creates an environment where microorganisms cannot multiply and cause food spoilage.

Altering pH can be achieved through the addition of a salt, sugar or acid (vinegar or lemon juice), solution. This denatures the enzymes, destroys micro-organisms in foods and creates an environment that is unsuitable for their growth. The concentration of acid reduces the time and temperature needed for cooking.

Herbs and spices are often added to soften the flavour of the acid solution.

Cold pickled salmon is coated in a dry marinade of salt, sugar and dill and cured for a few days. The action of osmosis draws the moisture from the food and turns the dry cure into highly concentrated, acid based brine, altering the pH and curing or pickling the food.

Pickled foods are soaked in acid or salt and acid based brines, corned products are soaked in both acid and salt-based brine. Cured products are treated with smoke, salt, or in the case of cheese, injected with bacteria. Foods commonly preserved by curing include ham and fish.

Altering pH in food products has varying effects on the weight of the food in comparison to the natural products and some of these foods (fish, meat), need to be transported in temperature controlled conditions and stored correctly in a refrigerated controlled environment to extend shelf life.

### Experiments

#### Aim:

To observe and record results and draw conclusions about the changes to the physical and chemical properties of fish when it is pickled.

#### Experiment 1 - Hot Pickled Salmon

#### Method:

- Each group, either as a class or in groups of four, will need:

350 gms salmon fillet (ask your fishmonger for a piece from the thick end of the fillet with skin on and pin bones removed)

Acid-based brine (Cure):

½ cup white wine vinegar

½ cup lemon juice

½ cup water

2 Tb sugar

1 dried chilli

- 1 cardomon pod bruised
- 1 clove garlic
- ¼ tspn peppercorns
- ¼ tspn fennel seeds
- ¼ tspn coriander seeds
- ½ white onion, finely sliced

1. Combine all ingredients except salmon and onion in a bowl
2. Add salmon and cover and chill for 2 – 5 hours
3. Place onion in nonstick pan, drain marinade from fish into pan, bring to the boil over high heat, reduce heat
4. Place salmon on onions, cover and simmer for about a minute until fish is opaque but moist
5. Transfer fish mixture to jar, cool liquid slightly then pour over fish and chill for up to 5 days in the fridge.

## Experiment 2 – Cold Pickled Salmon

### Method:

Each group, either as a class or in groups of four, will need:

350 grams salmon fillet (ask your fishmonger for a piece from the thick end of the fillet with skin on and pin bones removed)

Salt-based brine (Cure):

- ½ cup salt
- ½ cup castor sugar
- 2 gms fresh dill, chopped
- finely grated rind of ½ lemon and ½ orange
- teaspoon ground white pepper
- 2 tablespoons cognac, optional

1. Place 2 or 3 shallow slashes into the skin with a very sharp knife (this is essential to assist the curing process)
2. Mix the cure ingredients (except cognac) together in a large bowl
3. Lay some cling film onto a shallow tray, spread with half of the cure and press salmon, skin side down, into the cure
4. Brush the flesh of the salmon with cognac, sprinkle with the remaining cure and wrap tightly with another two or three layers of cling film
5. Weigh the salmon  
Place a weight of approximately 1.5 kilos on top of the fillet and refrigerate for 24 hours
6. You will notice the dry cure becoming liquid during this time. This is liquid draining from the fish and is normal.

(Ref: Russell Blaikie's Citrus Cured Salmon <http://blogs.abc.net.au/wa/2009/02/russell-blaikie.html>)

### Results

- Use food industry specific terminology to record the results in the table  
For texture, flavour and overall quality rank as follows:  
Score each criterion with a number (3 = highly palatable, 2 = palatable, 1 = unpalatable)

<b>Sample</b>	<b>Weight</b> before and after pickling	<b>Colour</b> before and after pickling	<b>Texture</b> after pickling	<b>Flavour and odour</b> after pickling	<b>Overall quality</b>	<b>Physical properties</b> after pickling
Hot Pickled Salmon	Before  After	Before  After				
Cold Pickled Salmon	Before  After	Before  After				

### Conclusions

- Analyse two effects of pickling on the physical properties of fish

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2 \_\_\_\_\_  
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- Explain the process by which the functional properties of foods are modified by the processing technique of pickling to prevent food spoilage

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- Describe the effect of pickling on the nutrition of fish

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- Justify one economic and one product development implication of the use, by the hospitality industry, of products preserved by pickling

Economic

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Product development

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- Describe one food safety issue involved in the production and one in the consumption of pickled foods

Production

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Consumption

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**Practical:**

- Investigate recipes for producing product preserved by altering pH
- Select appropriate recipes and processing techniques and produce a product preserved by altering pH
- The recipes selected must maximize the use of human and non-human resources e.g. time, money, equipment, skills
- The pickled products may be stored for use in Task 1 Part B.

**Teacher comment:**

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# RECIPE

## Tutorial 4: Properties of food: Preservation -Altering pH- Salt and acid brine

COURSE: Salad, vegetable and meat entrée and main dishes	NAME OF DISH: Preserved Lemons	No. portions: 2
		Serving dishes required:
		Garnish:
Ingredients	Method	Equipment
6-8 lemons rock salt olive oil	<ol style="list-style-type: none"> <li>1. Wash lemons scrub off wax if commercially grown</li> <li>2. Slice <math>\frac{3}{4}</math> the way through vertically leaving lemon attached but in quarters</li> <li>3. Fill lemon with salt</li> <li>4. Place in sterilised jar with base of lemon at the bottom</li> <li>5. Repeat with another lemon, pack lemons into jar until jar is filled</li> <li>6. Top up jar with lemon juice leaving room for <math>\frac{1}{2}</math> cm of oil on top</li> <li>7. Leave to cure for 6 weeks.</li> </ol> <p>Use in salads, vegetable and meat dishes particularly those of Middle Eastern origin.</p>	500ml jar

## TUTORIAL 5

### Preservation and physical and chemical properties of foods: Fermentation

Fermentation is the process during which carbohydrate in foods is converted to alcohol or acid.

The oldest known use of fermentation is the production of alcoholic drinks such as wine, cider and beer.

The fermentation of yeast produces carbon dioxide and alcohol. Yeast is a single cell micro-organism that reproduces by budding, many varieties exist. Bread making relies on the production of carbon-dioxide to aerate doughs. Yeast used in bread making comes in three forms

- dried - needs moisture to activate and has a long shelf life
- compressed - sold refrigerated, in block form and has a short shelf life
- liquid creamed yeast - only used in large scale commercial production

Warm temperatures of 25-27°C, create the ideal environment for the microorganisms to multiply and ferment rapidly. Yeast can reproduce with oxygen (aerobically) and without oxygen (anaerobically).

Yeast + Food (Sugar) + Warmth + Moisture = Yeast Growth + Alcohol + Carbon Dioxide

Traditional bread making techniques used a method similar to that now used for sourdough. A starter dough was kept from the previous day's bread making and used to begin the fermentation process. The physical properties of bread are determined by the flour, the gluten content and the manipulation of the gluten by mixing and kneading. Modern bread making sometimes uses bread improvers - oxidising agents which improve the texture and softness and reduce the time needed to develop gluten by manipulating the dough.

Fermentation is also the process whereby the sugar in foods is converted to lactic acid. This technique of preservation is used to produce sour foods such as pickled cucumbers, kimchi, yoghurt and sauerkraut.

The fermentation of milk can be achieved by adding lactic acid producing bacteria to milk (cow, goat, sheep, soy), in a controlled environment, to make yoghurt. This fermentation process can take a few hours.

Lactose (milk) + Bacteria + Warmth = Lactic Acid (yoghurt)

Fermented food products are more acidic than the natural products and more easily packaged and transported. They also have an extended shelf life when stored correctly.

**Experiment 1** (Ref: Heath, G. McKenzie, H. Tully, L. (2008). *Food by Design* , Melbourne: Pearson Heinemann p.133)

**Aim:**

To observe, record results and draw conclusions about the conditions required for the fermentation of yeast.

**Method:**

Each group of four students will need:

- 8 test tubes
- 8 balloons
- 8 x 1 teaspoon yeast
- 6 x ½ teaspoon sugar
- 4 x 1 teaspoon flour
- 2 x 1 teaspoon bread improver
- 4 x 50 mls warm water
- 4 x 50 mls iced water

1. Set up each test tube according to column 1 in the results table below
2. Stretch a balloon over the neck of each test tube
3. Observe and record what happens after 5, 10, 15 and 30 minutes.

<b>Test tube</b>	<b>5 Minutes</b>	<b>10 Minutes</b>	<b>15 Minutes</b>	<b>30 Minutes</b>
<b>1</b> 50 mls iced water 1 teaspoon yeast				
<b>2</b> 50 mls iced water 1 teaspoon yeast ½ teaspoon sugar				
<b>3</b> 50 mls iced water 1 teaspoon yeast 1 teaspoon flour ½ teaspoon sugar				
<b>4</b> 50 mls iced water 1 teaspoon yeast 1 teaspoon flour ½ teaspoon sugar 1 teaspoon improver				

<b>5</b> 50 mls warm water 1 teaspoon yeast				
<b>6</b> 50 mls warm water 1 teaspoon yeast ½ teaspoon sugar				
<b>7</b> 50 mls warm water 1 teaspoon yeast 1 teaspoon flour ½ teaspoon sugar				
<b>8</b> 50 mls warm water 1 teaspoon yeast 1 teaspoon flour ½ teaspoon sugar 1 teaspoon improver				

### Results

- Use food industry specific terminology to record results in the table.

## Experiment 2

### Aim:

To observe, record results and draw conclusions about the changes to the physical and chemical properties of milk when it is fermented

### Method:

Each group of four students will need:

pH metre or pH strips

5 Easy-yo yogurt makers, slow cookers or electric yoghurt makers

5 x 1 Lt milk samples e.g. full cream cow, goats or sheep, soy, rice or oat, UHT

5 x 2-3 drops calcium chloride

5 x 1/8 tspn yoghurt starter

1. Record the nutritional information from the milk containers
2. Test pH of each milk
3. Place each milk in a separate saucepan, heat to 90°C. Use a thermometer to test temperature. **DO NOT BOIL**
4. Strain each milk sample through a sieve into container
5. Return each sample to the original saucepan
6. Reduce temperature to 40°C then add the culture and the calcium chloride and mix well
7. Fill the Easy-yo container to baffil as directed. If the water is too hot it will kill the culture. Measure the pH
8. Stand for 2-3 hours then re-measure pH
9. After 6 hours or overnight the yoghurts will have completed fermentation, re-measure pH
10. Use food industry specific terminology to record results in the following table.

	Consistency (chemical change in milk mixture)				Colour (e.g. bright white, off white, cream)	Flavour and aftertaste (e.g. sweet, sour, bland)	Nutritional value				
	When culture is added	2 – 3 hours	5 – 6 hours	Next day			Kj	Protein	Fat	CHO	Sodium
1. Full cream milk											
2. Goat's milk											
3. Soya milk											
4. Rice milk											
5. UHT milk											

### Results

- Use food industry specific terminology to record the results in the table

## Conclusions

- Analyse two effects of fermentation on the physical properties of foods

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- Explain the process by which the functional properties of foods are modified by the processing technique of fermentation to prevent food spoilage

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- Describe the effect on nutrition of the process of fermentation

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- Justify one economic and one product development implication of the use, by the hospitality industry, of fermented products

Economic

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Product development

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- Describe one food safety issue involved in the production and one in the consumption of fermented foods

Production

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Consumption

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**Practical:**

- Investigate recipes for producing products using the processing technique of fermentation
- Select appropriate recipes and processing techniques and produce a product using fermentation
- The recipes selected must maximize the use of human and non-human resources e.g. time, money, equipment, skills
- The products may be stored for use in Task 1 Part B.

**Teacher comment:**

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## RECIPE

### Tutorial 5: Properties of food: Preservation - Fermentation

(Ref: <http://www.exploratorium.edu>)

<b>COURSE :</b> Accompaniment	<b>NAME OF DISH :</b> Kimchi	No. portions: 4
		Serving dishes required: Small side dish
		Garnish:
Ingredients	Method	Equipment
500 gms cabbage $\frac{1}{4}$ cup rock salt $\frac{1}{2}$ walnut sized piece of ginger, grated 2 cloves garlic 5 spring onions 1 Tb sugar 1 Tb crushed red chilli 1 chilli, finely diced	<ol style="list-style-type: none"> <li>1. Wash and cut cabbage into large dice 3 cm x 3 cm</li> <li>2. Place in glass bowl with salt and stand overnight</li> <li>3. Drain water off and rinse very well to remove excess salt</li> <li>4. In a glass bowl mix together all ingredients and add drained cabbage, toss thoroughly to coat cabbage (save juices that accumulate in the bottom of the bowl)</li> <li>5. Pack the cabbage tightly into a sterile jar and cover with juice</li> <li>6. Add cold boiled water if necessary to achieve 2 cm of head room</li> <li>7. Cover with plastic wrap, secure with elastic band</li> <li>8. Refrigerate for 3 days before eating.</li> </ol>	Glass or plastic bowl and jar Plastic strainer Plastic wrap Large rubber bands

## RECIPE

### Tutorial 5: Properties of food: - Fermentation

<b>COURSE:</b> Snack, Entrée, Main, Dessert or Accompaniment	<b>NAME OF DISH:</b> Bread rolls	No. portions: 2 <hr/> Equipment required: Baking tray <hr/> Garnish:
Ingredients	Method	Equipment
500 gms plain flour 2 tsp (7gms) dried yeast 1½ tsp salt 2 tsp olive oil 1 tsp sugar 375 mls lukewarm water extra water for brushing 1 tsp poppy seeds or sesame seeds	<ol style="list-style-type: none"> <li>1. Line baking tray with baking paper</li> <li>2. Preheat oven 180°C, oven rack in centre</li> <li>3. Place yeast, sugar, water and oil in a bowl</li> <li>4. Place the flour, yeast mixture and salt in a large bowl and mix well with a wooden spoon to combine, then use your hands to bring the dough together in the bowl</li> <li>5. Turn the dough onto a lightly floured surface and knead for 8-10 minutes or until smooth and elastic</li> <li>6. Shape the dough into ball. Brush with a little olive oil and cover bowl with plastic wrap or a damp tea towel and place in a warm place e.g. on stove top</li> <li>7. Allow to prove for 30 mins or until dough doubles in size</li> <li>8. Punch down the dough in the centre with fist. Turn the dough onto lightly floured surface and knead again for 2-3 minutes or until it has returned to original size</li> <li>9. Divide dough into equal portions and shape e.g. knot rolls, dinner rolls, baguettes, bread twists or bread crostini</li> <li>10. Once rolls are shaped allow to prove until they double in size (depending on time constraints)</li> <li>11. Brush with a little water, sprinkle with seeds or dust with flour</li> <li>12. Bake for 15-20 mins or until golden brown and bread sounds hollow when tapped on the bottom</li> <li>13. Place on a wire rack to cool</li> <li>14. Serve warm or cold.</li> </ol>	
	<b>Variations</b> Chopped semi- dried tomatoes, olives or dried herbs produced in previous lessons Add to the dry ingredients before adding water.	