Food Preparation and Nutrition: Year 10

By the end of year 10 students will have been taught about the provenance, classification, nutritional value, food science and storage of each of the food commodity groups: fruit and vegetables; milk, cheese and yoghurt; cereals; meat, fish and poultry; fats and sugars and alternative proteins.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge Introduced	2 week 'refresher' period where key principles of nutrition and good health/food science/food hygiene and safety can be recapped. **Commodity: Fruit and vegetables, including potatoes (fresh, frozen, dried, canned and juiced)** Provenance: How/where the commodity is grown, processed and or manufactured and transported. Link to climate, types of farming/ processing. Bring in organic verses non-organic (Soil Association, etc.) Use of pesticides and herbicides – discuss possible impact on health Customer choice can be linked to cost – discuss Food miles Seasonality. Classification: Difference between fruits and vegetables – leaves, stems, roots, tubers, bulbs, etc. Nutritional values (include sources, functions, deficiencies, excess, daily requirements) Recap on vitamins and minerals (cover A, B, C, D, calcium and iron), and include complementary actions of the nutrients vitamin C and iron/vitamin D and calcium Nutrient requirements – link to different life stages Fat and water soluble vitamins – effect of oxidation, heat on vitamin	**Commodity: Milk, cheese and yoghurt** Provenance: How animals are reared, fed and milked. Animal sources of milk Different methods of preserving milk (drying, UHT, pasteurisation, etc.) –link to convenience foods Importance of hygiene for effective food safety (heat treatment) Effect on nutritional content from processing Classification Different animal sources/ non-dairy milk – e.g. nut, soya, coconut; Link secondary processing – to cream, yoghurt, cheese, etc. Different types of milk – skimmed, semi-skimmed, etc. Different types of cream – whipping, soured, etc. (link to fat content) Different types of cheese – hard, soft, etc. (link to fat content Nutritional values (include sources, functions, deficiencies, excess, daily requirements) Nutrient requirements (linked to different life stages) Protein – HBV and discuss amino acids Fats – saturated Recap on vitamins and minerals (cover vitamins A and D and calcium), and include complementary actions of the nutrients vitamin D and calcium Fat soluble vitamins A and D Trace element	**Commodity: Cereals (including flours, breakfast cereals, bread and pasta** Provenance: How climate, soil, etc., affects the types of cereals which can grow GM crops – discuss Cereal – as a staple food; impact of crop failure on health of a nation (link to sustainability and world health. Look at how cereals are grown, harvested and processed General structure of grain – endosperm, germ and bran Suggest focusing on wheat and rice as there are many resources available online Milling of wheat into flour – key processing stages Secondary processing: Breakfast cereals – use different grains and look at sugar and salt content (link in food labelling on packaging – look at breakfast cereal packaging to compare cereal types and nutrients – how healthy are the cereals? Also, link in function of packaging and environmental impact, and marketing of breakfast cereals – who are these cereals aimed at?) Wheat into bread types, pasta Key stages in the bread making process Key stages in the pasta making process. Classification: Look at the range of cereals grown and eaten across the world Link secondary processing to selected cereals: Wheat – wholemeal, white, self-raising, semolina, etc. Rice – brown, white, basmati, Arborio, rice flour, rice vinegar, etc. Oats	**Commodity: Meat, fish, poultry, eggs** Provenance: Intensive farming verses natural farming Link to animal welfare and environmental issues. How/where the commodity is grown, processed and or manufactured and transported. Types of farming/ processing. Bring in organic verses non-organic Link in with provenance Look specifically at an animal of your choice, and review how this animal is farmed/reared and slaughtered (cattle, pigs, sheep, etc.) Link to animal feed (can reference BSE) and shelter How fish (including shellfish) is caught – again, reference sea fish and farmed fish (fish quotas and availability/ethical fishing) Poultry (including eggs) – how poultry is reared and slaughtered/how egg farming is conducted (different animal sources as well as hens eggs). Game, (briefly) Secondary processing: Cuts of meat and poultry, processing into bacon, ham, sausages, pies, etc. (link to methods of preservation) Offal Cuts of fish (whole, steaks, filets, etc.) Eggs – pasteurised whole/white/yolk (link to food safety and convenience) Classification:	**Commodity: Butter, oils, margarine, sugar and syrup** Recap on: Food miles (UK verses imported raw materials to make the butter, oil, margarine) Where is sugar cane and sugar beet grown? Organic verses non-organic, GM Processing: Butter, oils, margarine Butter – how is butter made? Oils/margarine – growing of vegetable crop for oil production, include pressing (mention fish oil) Processing of margarine – different oil types used, fortification Sugar and syrup Cane and beet (climate requirements), refining process, process of making syrup Primary processing: Oil, sugar Secondary processing: Butter, margarine, sugar syrups. Classification: Butter, oils, margarine (mention animal and vegetable fats) Hard fats – solid at room temperature Liquid fats – liquid at room temperature Butter – salted, unsalted (mention lard and suet) Margarine – different oil bases (sunflower, olive, soya, etc.). Is margarine healthy? (hydrogenation) Fortification (mention vegetable shortening) Sugar and syrup Sugar cane, sugar beet, types of syrup. Sugar substitutes. Nutritional values (include sources, functions, deficiencies, excess, daily requirements)	**Commodity: Soya, tofu, beans, nuts, seeds** Provenance: How/where soya, beans, nuts and seeds are grown, link to climate, Organic verses non-organic Food miles Seasonality Soya, tofu How soya beans are cultivated Secondary processing: How soya is processed into tofu, TVP (textured vegetable protein), and link back to soya milk How beans (pulses/legumes), nuts and seeds are grown Include: mycoprotein (Quorn TM) – what it is derived from, how it is processed into mycoprotein Secondary processing: Beans (legumes) – link to preservation (drying and canning) Nuts – ground, flaked, nibbed, etc. Seeds – drying, Classification: Soya products – milk, yoghurt, TVP, tofu, tempeh Beans (legumes) – red kidney, black eyed, aduki, etc. Nuts – brazil, cashew, almonds, etc. (include a discussion on 14 allergens) Seeds – sesame, poppy, caraway, etc Nutritional values (include sources, functions, deficiencies, excess, daily requirements) Soya products and Quorn TM

	content of fruits and vegetables Compare nutrient content of a specific fruit or vegetable – fresh, frozen, canned, dried, etc Dietary considerations: Vegetarians (lacto/lacto-ovo/vegan) Bone health – link in with vitamin D and calcium Healthy blood – link in with vitamin C and iron. Food science Composition of fruits and vegetables Oxidation/enzymic browning Food hygiene and safety Storage Ambient Chilling Freezing	– iodine Effect on nutritional content from processing Dietary considerations: Link to bone health: Calcium and vitamin D Link to allergies: Lactose intolerance from cow milk (why?) What are the alternatives? Link to heart health: Fat content and type Food science: Chemical and physical structure of dairy based products Emulsion – explain why milk is an emulsion Denaturation and coagulation of milk proteins Making cream, butter, yoghurt – the science behind it Making cheese – use of rennet (curds and whey). Benefits of bacteria in the making of yoghurt, cheese, etc. Effect of heat on cheese Food hygiene and safety: Concept of high risk foods (dairy being a category) How bacteria multiplies How to avoid cross-contamination Why heat treating raw milk is important – link to food science How should dairy based products be stored? Temperatures? Storage: Link to dried, cartons, unopened and opened cans, fresh, frozen, etc. What are suitable conditions for storage? Why?	– rolled, oatmeal, etc. Discuss gluten-free flour Nutritional values (include sources, functions, deficiencies, excess, daily requirements): Cereals are a staple food (primary source of carbohydrate) Energy requirements (link to different groups) Balance of energy input with energy output Nutrient requirements (link to different life stages) Carbohydrate – starch Dietary fibre (NSP: non-starch polysaccharide) – soluble and insoluble B vitamins Effect of nutrient absorption due to presence of phytates Principal of fortification of food in the context of flour and breakfast cereals Water soluble vitamin B group – effect of cooking. Dietary considerations: Importance of wholegrains to reduce risk of heart disease, type 2 diabetes and control blood cholesterol Link to effect of low-fibre diet: Haemorrhoids, diverticulitis, cancer of the colon Deficiencies: Beriberi – lack of thiamin (vitamin B1) Pellagra – lack of niacin (vitamin B3) Allergies: Coeliac disease Food science: Chemical and physical structure of cereal grains Gluten formation, gelatinisation, coagulation, dextrinisation, retrogradation Gels Breadmaking: • Scientific principles, including problem solving • Chorleywood process in breadmaking • Vitamin C (ascorbic acid) in large scale bread manufacturing Yeast as a	Animal types Cuts of meat (link in methods of cooking – tender versus tough cuts, and cost) Gelatine Categories of fish – white/oily/shell, etc., also flat, round, etc. (link in preservation – canned, smoked, etc.) Types of egg. Nutritional values: Nutrient requirements (link to different life stages) Protein (HBV) Saturated fat B vitamins Iron (include complementary action of vitamin C with iron) Trace element – iodine and fluoride in fish and shellfish Health benefits of eating fish Omega 3 in oily fish Dietary considerations: Implications of excess or deficiency of protein Healthy blood – iron (haem and non-haem iron) Iron deficiency, and recap on complementary actions of vitamin C and iron Health benefits of omega 3 Include religious considerations when eating meat. Food science: Chemical and physical structure of meat, fish, poultry and eggs Denaturation (e.g. uncoiling of protein molecules when making meringues) Coagulation (e.g. setting of egg in cakes) Foaming (e.g. formation of foam when whisking egg white protein) Aeration Connective tissue in meat and fish – how this should affect the cooking method Maillard reaction. Food hygiene and safety: High risk foods – link to specific food poisoning bacteria, correct storage temperatures How to tell if meat is 'off' Can link to preservation (e.g. dried meat, canned meat, pie fillings, smoked sausages, dried egg,	Butter, oils, margarine Nutrient requirements (linked to different life stages) Energy dense Saturated and unsaturated fats Calcium and vitamin content Fortification Sugar and syrup Empty calories, link to weight gain, obesity, dental caries, type 2 diabetes, etc. Free sugars. Dietary considerations: Butter, oils, margarine Energy dense Implications of a diet high in saturated fat Making sensible choices on fat type (unsaturated, etc.) Lower fat alternatives Fat soluble vitamins Sugar and syrup Consider sugar alternatives, including natural sugars Again link to obesity, type 2 diabetes and dental caries. Food science: Butter, oils, margarine Chemical and physical structure of butter, oils, margarine Hydrogenation of oils to produce hard fats – health implications Plasticity Shortening Emulsification – make butter Melting point/smoke point Sugar and syrup Chemical and physical structure of sugar and syrup Caramelisation. Food hygiene and safety: Butter, oils, margarine Discuss storage relating to rancidity Sugar and syrup Low risk – cover foreign bodes, pests, etc. Storage; Butter, oils, margarine Where should butter and margarine be stored? Reinforce chilled food temperatures Where should oil be stored? Discuss effect of light on quality and longevity of oil Sugar and syrup Where should sugar be stored? Why is humidity a consideration? Syrup storage? Crystallisation.	Protein, amino acids, HBV source Beans (legumes), nuts and seeds Protein, amino acids, LBV source Complementing proteins High in fibre and other nutrient sources. Dietary considerations: Soya products and Quorn TM Good HBV source for vegetarians Beans (legumes), nuts and seeds Good LBV source for vegetarians Nuts – high in good fats Allergies: Nuts (link to 14 allergens) Fibre source – recap on soluble and insoluble. Food science Soya products and Quorn TM Beans (legumes), nuts and seeds Nuts as a thickener Food hygiene and safety Soya products and Quorn TM Recap on storage temperatures Beans (legumes), nuts and seeds Keep nuts away from other food sources – risk of allergen contamination Discuss nut storage relating to rancidity Storage soya products and Quorn TM Recap on chilled, frozen, ambient, and discuss suitable storage Beans (legumes), nuts and seeds Discuss suitable storage (mostly ambient) Rancidity of nuts – how to avoid this.

			raising agent Recap on types of raising agents and discuss their principles Food hygiene and safety: Concept of low risk foods (exception includes cooked rice) Food spoilage – mould, etc. Food safety issues with cooked rice	etc.) How to tell fish is fresh Lion mark on eggs. Storage Link with food hygiene and safety, also link with preservation (e.g. how to store diced, frozen, canned foods as well as fresh foods		
Skills developed	Range of practical skills and techniques, cooking with fruits and vegetables as a commodity: **(1. knife skills,)** saute, water based cooking, roasting, reduction sauces, presentation techniques) NEA Assessment 1 practise investigation Food hygiene and safety: **(1. knife skills)** **(2. prepare fruits and vegetables)** **(5. select and adjust a cooking process)** **(9. water based methods using the hob)** **(10. dry heat and fat based methods using the hob)** **(12. using the oven: roasting)** **(13. make sauces)** **(20. Judge and manipulate sensory properties)**	NEA practice: investigations could include: • Demonstrate and explain how an emulsion is formed when making butter. • Explain the changes that take place in milk when it is heated. • Make yoghurt and explain the food science behind it. • Make cheese and explain the food science behind it. • Why is UHT milk slightly less white? Compare the flavour of UHT milk with fresh milk and discuss. **(13. make sauces)** **(14. set a mixture- removal of heat (gelation))** **(1. knife skills)** **(2. prepare fruits and vegetables)** **(5. select and adjust a cooking process)**	NEA practice: investigations could include: • Investigate the best flour for breadmaking (suggest gluten ball experiment, or making small batches of rolls using different flours and then conduct sensory testing) • Conduct an experiment to show the gelatinisation of a range of starches. What happens when these starches are frozen and then defrosted? • Conduct an experiment to find out the effect of other ingredients on the thickness of starch • What happens when you apply dry heat to starch **(3 prepare, combine and shape)** **(6. weigh and measure)** **(7. preparation of ingredients and equipment)** **16. use of raising agents** **17 make a dough** **18 shaping and finishing a dough** **(1. knife skills)** **(2. prepare fruits and vegetables)** **(5. select and adjust a cooking process)**	NEA practice: investigations could include: • Make a batch of meringues and explain the changes that take place within the egg white protein. • Show how the setting of egg protein can be affected when making baked egg custard. • Show and explain how egg white foaming is affected when other ingredients are added. • Investigate the changes that take place in meat (or fish) during cooking. • Conduct an experiment to show the best way to tenderise meat by breaking down the connective tissue. **(4. tenderise and marinate)** **(5. select and adjust a cooking process** **15.set a mixture- heating (coagulation)** **19. test for readiness** **(10. dry heat and fat based methods using the hob)** **(1. knife skills)** **(2. prepare fruits and vegetables)** **(5. select and adjust a cooking process)**	NEA practice: investigations could include: Butter, oils, margarine • Demonstrate the creaming properties of fats when making a sponge cake using the creaming method. Which fat produces the best results? Explain why. • Show the shortening properties of fats when making a shortcrust pastry. Which fat produces the best results? Explain why. • Make butter to show the emulsification process. Explain what is happening during this process. • Conduct an experiment to show which ingredients will help to stabilise mayonnaise and prevent the mix from separating. Sugar and syrup • What happens when sugar (sucrose) is heated. **(8. use of equipment)** **(1. knife skills)** **(2. prepare fruits and vegetables)** **(5. select and adjust a cooking process)** **17 make a dough** **18 shaping and finishing a dough**	NEA practice: • How effective are ground nuts when used as a Thickener (possible chickpea liquid as a thickener or egg alternative) **(11. using the grill)** **(12. using the oven: roasting)** **(1. knife skills)** **(2. prepare fruits and vegetables)** **(5. select and adjust a cooking process)**
Key vocabulary/ concepts/ideas	Commodity, provenance, processing, preservation,	Food processing, pasteurisation, UHT,	Cereals: grains and processing, Organic and GM crops,	Intensive farming verses natural farming Link to animal welfare and environmental issues.	**Food processing**	Source and impact on environment. **Provenence**

students must master	Nutrition: vitamins, minerals and fibre Source and impact on environment. Food miles Seasonality fresh, frozen, dried, canned and juiced, enzymic browning, caramelization, saute, stir-fry, roast, reduction	Source and impact on environment. Nutrition: HBV protein Special dietary requirements lactose intolerance, vegan allergy	Source and impact on environment. Refined, Wholegrain, Dietary fibre, Gluten, allergy Dextrinization Gelatinisation	nutrition, special diets vegetarian/vegan Cuts of meat Denaturation Safe cooking of meat and the avoidance of cross-contamination	Source and impact on environment. **Nutrition** **Artificial** **Creaming, aeration, emulsification** **caramelization**	**organic**
Knowledge revisited	Eatwell guide and nutrition Enzymic browning Vitamins and minerals in a balanced diet Food storage and temperature control Classification (fruit groups y7) source provenance	Food provenance, source and processing, nutritional value and effects of preparation and cooking methods. Classification of foods within this group. Dietary considerations inc (special diets) Balanced diet, food commodity group, **Commodity: Fruit and vegetables,** **And milk cheese and yoghurt. HBV protein.** Food science Food hygiene and safety	**Cereal grains (y8) Cereals processing, science of bread** Importance of wholegrains to reduce risk of disease and for general good health **Food science: dextrinization, raising agents** Food provenance, source and processing, nutritional value and effects of preparation and cooking methods. Classification of foods within this group. Dietary considerations inc (special diets) Balanced diet, food commodity group, **Commodity: Fruit and vegetables,** **milk cheese and yoghurt. HBV protein.** **Commodity: Cereals** Food science Food hygiene and safety	Food poisoning, handling raw meat. Food provenance, source and processing, nutritional value and effects of preparation and cooking methods. Classification of foods within this group. Dietary considerations inc (special diets) Balanced diet, food commodity group, **Commodity: Fruit and vegetables,** **milk cheese and yoghurt. HBV protein.** **Commodity: Cereals** **Commodity: Meat, fish, poultry, eggs** Food science Food hygiene and safety	Food provenance, source and processing, nutritional value and effects of preparation and cooking methods. Classification of foods within this group. Dietary considerations inc (special diets) Balanced diet, food commodity group, **Commodity: Fruit and vegetables,** **milk cheese and yoghurt. HBV protein.** **Commodity: Cereals** **Commodity: Meat, fish, poultry, eggs** **Commodity: Butter, oils, margarine, sugar and syrup** Food science Food hygiene and safety	Food provenance, source and processing, nutritional value and effects of preparation and cooking methods. Classification of foods within this group. Dietary considerations inc (special diets) Balanced diet, food commodity group, **Commodity: Fruit and vegetables,** **milk cheese and yoghurt. HBV protein.** **Commodity: Cereals** **Commodity: Meat, fish, poultry, eggs** **Commodity: Butter, oils, margarine, sugar and syrup** Alternative proteins and special diets buddha bowl, plant based protein Food science Food hygiene and safety
Skills revisited	Food preparation Knife skills, cooking skills, stir frying, roasting, food combining **(20. Judge and manipulate sensory properties)**	**(1. knife skills)** **(2. prepare fruits and vegetables)** **(5. select and adjust a cooking process)** **(13. make sauces)**	**Bread making, shaping a dough.** **Cooking starchy carbohydrates** **(3 prepare, combine and shape)** **(6. weigh and measure)** **(7. preparation of ingredients and equipment)** **16. use of raising agents** **17 make a dough**	**(1. knife skills)** **(2. prepare fruits and vegetables)** **(5. select and adjust a cooking process)** Safe cooking with raw meat	**(1. knife skills)** **(2. prepare fruits and vegetables)** **(5. select and adjust a cooking process)** **17 make a dough**	**(1. knife skills)** **(2. prepare fruits and vegetables)** **(5. select and adjust a cooking process)** **(20. Judge and manipulate sensory properties)**

		(20. Judge and manipulate sensory properties)	**18 shaping and finishing a dough** **(1. knife skills)** **(2. prepare fruits and vegetables)** **(5. select and adjust a cooking process)** **(20. Judge and manipulate sensory properties)**	**(20. Judge and manipulate sensory properties)**	**(5. select and adjust a cooking process** **15.set a mixture- heating (coagulation)** **19. test for readiness** **18 shaping and finishing a dough** **(20. Judge and manipulate sensory properties)**	
CEIAG Links/ Opportunities	**GB4. Linking curriculum learning to careers.** **Chef** **Health promotion (nutritionist, dietician,)** **GB2. Learning from career and labour market information:** **Seasonal baking and enterprise opportunities for personalisation of food products** Food scientist Food product development Chef or food catering industry Self employed -own food business Nutritionist Farming	**GB4. Linking curriculum learning to careers.** **Health promotion (nutritionist, dietician,)** **Food scientist** **Food technologist** **food product development** **Chef** **Food business** **Food scientist: microbiologist**	**GB4. Linking curriculum learning to careers.** **Health promotion (nutritionist, dietician,)** **Food scientist** **Food technologist** **food product development** **Chef** **Food business** **Seasonal baking and enterprise opportunities for personalisation of food products**	**GB4. Linking curriculum learning to careers.** **Health promotion (nutritionist, dietician,)** **Food scientist** **Food technologist** **Food scientist: microbiologist** **food product development** **Chef** **Food business**	**GB4. Linking curriculum learning to careers.** **Health promotion (nutritionist, dietician,)** **Food scientist** **Food technologist** **food product development** **Chef** **Food business**	**GB4. Linking curriculum learning to careers.** **Health promotion (nutritionist, dietician,)** **Chef** **Food business** **GB2. Learning from career and labour market information: Sustainable future concerns.** **Food product development plant-based foods discussion increased in popularity. Climate change.** **Food policy development**