Scheme of Learning and Specification Mapping

The scheme of learning sets out the knowledge, understanding and skills required to cook and apply the principles of food science, nutrition and health, food safety, food choice and food provenance. Students will build upon prior learning from Key Stage 3. The specification has been mapped throughout the scheme of learning and the intention is that the specification content is not delivered in a linear fashion. The table below is a model to show the specification content. The table could be used to map the coverage of the subject when devising or modelling a scheme learning.

3.1 Food preparation skills

Films from digital resource

Skill 1: General practical skills	Skill 2: Knife skills	Skill 3: Preparing fruit and vegetables	Skill 4: Use of the cooker	Skill 5: Use of equipment	Skill 6: Cooking methods
• Weigh and measure • Prepare ingredients and equipment • Select and adjust cooking times • Test for readiness • Judge and modify sensory properties	• Fruit and vegetables • Fish, meat or alternatives	• Preparing fruit and vegetables	• Using the grill • Using the oven	• Using equipment	• Water-based methods using the hob • Dry heat and fat-based methods using the hob
Skill 7: Prepare, combine and shape	**Skill 8: Sauce making**	**Skill 9: Tenderise and marinate**	**Skill 10: Dough**	**Skill 11: Raising agents**	**Skill 12: Setting mixtures**
• Prepare, combine and shape	• Starch-based • Reduction • Emulsion	• Tenderise and marinate	• Making a dough (bread, pastry, pasta) • Shaping and finishing	• Egg as a raising agent • Chemical raising agents • Steam as a raising agent • Biological raising agents	• Removal of heat • Use of protein

3.2 Food, nutrition and health

Chapter 1: pages 2–37

3.2.1. Macronutrients

3.2.1.1 Protein

- low and high biological value proteins
- protein complementation
- protein alternatives, e.g. textured vegetable protein, (TVP), soya, mycoprotein and tofu.

3.2.1.2 Fats

- saturated fats
- unsaturated fats (monounsaturated and polyunsaturated).

3.2.1.3 Carbohydrates

- starch (polysaccharides)
- sugars (monosaccharides/disaccharides)
- dietary fibre.

3.2.2 Micronutrients

3.2.2.1 Vitamins

Fat soluble

- vitamin A
- vitamin D
- vitamin E
- vitamin K.

Water soluble

- B group – B1 (thiamine), B2 (riboflavin), B3 (niacin), folic acid, B12
- vitamin C (ascorbic acid)
- loss of water soluble vitamins when cooking (B group and vitamin C).

Antioxidant functions of vitamins

- vitamin A
- vitamin C
- vitamin E.

3.2.2.2 Minerals

- calcium
- iron
- sodium (salt)
- fluoride
- iodine
- phosphorus.

3.2.2.3 Water

- The importance of hydration and the functions of water in the diet.

3.2.3 Nutritional needs and health

Chapter 2: pages 38–77

3.2.3.1 Making informed choices for a varied and balanced diet

- the current guidelines for a healthy diet
- portion size and costing when meal planning
- how people's nutritional needs change and how to plan a balanced diet for different life stages
- how to plan a balanced meal for specific dietary groups
- how to maintain a healthy body weight throughout life.

3.2.3.2 Energy needs

- the basal metabolic rate (BMR) and physical activity level (PAL) and their importance in determining energy requirements
- the recommended percentage of energy intake provided by protein, fat and carbohydrates (starch and sugar).

3.2.3.3 How to carry out nutritional analysis

- how to plan and modify recipes, meals and diets to reflect the nutritional guidelines for a healthy diet.

3.2.3.4 Diet, nutrition and health

- the relationship between diet, nutrition and health
- the major diet-related health risks.

3.3 Food science

3.3.1 Cooking of food and heat transfer

Chapter 3: pages 78–104

3.3.1.1 Why food is cooked and how heat is transferred to food

- the reasons why food is cooked
- the different methods of heat transfer

3.3.1.2 Selecting appropriate cooking methods

- selection of appropriate preparation, cooking methods and times to achieve desired characteristics.

3.3.2 Functional and chemical properties of food

Chapter 4: pages 105–157

3.3.2.1 Protein

- protein denaturation
- protein coagulation
- gluten formation
- foam formation.

3.3.2.2 Carbohydrates

- gelatinisation
- dextrinisation
- caramelisation.

3.3.2.3 Fats and oils

- plasticity
- shortening
- emulsification
- aeration.

3.3.2.4 Fruit and vegetables

- enzymic browning
- oxidation.

3.3.2.5 Raising agents

- chemical (baking powder, bicarbonate of soda, self raising flours which produce – carbon dioxide)
- mechanical (whisking, beating, folding, sieving, creaming and rubbing in – all incorporate air into the mixture)
- steam is produced when the water in any moist mixture reaches boiling point
- biological (yeast).

3.4 Food safety

3.4.1 Food spoilage and contamination

Chapter 5: pages 158–184

3.4.1.1 Micro-organisms and enzymes

- the growth conditions for micro-organisms and enzymes and the control of food spoilage
- bacteria, yeasts and moulds are micro-organisms
- high-risk foods
- enzymes are biological catalysts usually made from protein.

3.4.1.2 The signs of food spoilage

- enzymic action
- mould growth
- yeast action.

3.4.1.3 Micro-organisms in food production

- the use of micro-organisms in food production.

3.4.1.4 Bacterial contamination

- the different sources of bacterial contamination
- the main types of bacteria which cause food poisoning
- the main sources and methods of control of different food poisoning bacteria types
- the general symptoms of food poisoning.

3.4.2 Principles of food safety

Chapter 6: pages 185–201

3.4.2.1 Buying and storing food

- the food safety principles when buying and storing food.

3.4.2.2 Preparing, cooking and serving food

- the food safety principles when preparing, cooking and serving food.

3.5 Food choice

3.5.1 Factors affecting food choice

Chapter 7: pages 202–236

3.5.1.1 Factors which influence food choice

- to know and understand factors which may influence food choice.

3.5.1.2 Food choices

- food choice related to religion, culture, ethical and moral beliefs and medical conditions.

3.5.1.3 Food labelling and marketing influences

- how information about food available to the consumer, including labelling and marketing, influences food choice.

3.5.2 British and international cuisines

Chapter 8: pages 237–246

- food products from British tradition and two different cuisines. Schools or colleges/students can select different cuisines to study. Cuisine is defined as: 'a style characteristic of a particular country or region where the cuisine has developed historically using distinctive ingredients, specific preparation and cooking methods or equipment, and presentation or serving techniques'.

3.5.3 Sensory evaluation

Chapter 9: pages 247–254

- sensory testing methods
- how taste receptors and olfactory systems work when tasting food.

3.6 Food provenance

3.6.1 Environmental impact and sustainability of food

Chapter 10: pages 255–273

3.6.1.1 Food Sources

- where and how ingredients are grown, reared and caught.

3.6.1.2 Food and the environment

- environmental issues associated with food.

3.6.1.3 Sustainability of food

- the impact of food and food security on local and global markets and communities.

3.6.2 Food processing and production

Chapter 11: pages 274–289

3.6.2.1 Food production

- primary and secondary stages of processing and production
- how processing affects the sensory and nutritional properties of ingredients.

3.6.2.2 Technological developments associated with better health and food production

- technological developments to support better health and food production, including fortification and modified foods with health benefits, and the efficacy of these.

3.7 Food preparation and cooking techniques

Food preparation and cooking techniques will be assessed through the Non-Examination Assessment (NEA) element of the specification.

Students should be taught to:

- consider the influence of lifestyle and consumer choice when developing meals and recipes
- consider nutritional needs and food choices when selecting recipes, including when making decisions about the ingredients, processes, cooking methods and portion sizes
- develop the ability to review and make improvements to recipes by amending them to include the most appropriate ingredients, processes, cooking methods and portion sizes
- manage the time and cost of recipes effectively
- use their testing and sensory evaluation skills, adjusting where needed, to improve the recipe during the preparation and cooking process
- explain, justify and present their ideas about their chosen cooking methods to others
- make decisions about which are appropriate based on their understanding of nutrition, food, different culinary traditions and cooking and food preparation content in order to achieve their intended outcome. They should be able to carry out these techniques safely and combine them into appealing meals whilst evaluating the results.