



Higher and Advanced Higher Home Economics

Bi—level teaching guidance

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Higher and Advanced Higher Home Economics: Health and Food Technology

Bi – level teaching guidance

Introduction

The key purpose of this document is to highlight areas of content and elaboration overlap. This will assist centres in:

- ◆ facilitating learning
- ◆ planning and making optimum use of teaching time
- ◆ organising resources

It has been written in a format which will allow centres to adapt to their own requirements depending upon, for example, time allocation and available resources. The 'Essential Knowledge' column has been left blank to allow centres to enter the page numbers of their own 'Essential Knowledge' packs and can be updated as required by centres. Where there is no overlap the content grids are shown separately for Higher or Advanced Higher (AH) (see page 3).

The outline plan provides both a suggested order for teaching and time allocation. However, this is flexible as centres will need to adapt this dependent upon for example, the focus of the technological projects or dissertations, or the timing of prelim examinations.

This guide is provided in addition to existing guidance that is available for the Higher and AH Health and Food Technology Courses. This guide had been developed using SQA's Home Economics: Health and Food Technology Higher Ninth edition June 2009, and the SQA Home Economics: Health and Food Technology Advanced Higher Fifth edition March 2009 arrangements documents.

Curriculum for Excellence

Health and Food Technology provides ample opportunity for continued emphasis on literacy, numeracy, health and wellbeing, and the development of a wide range of skills for life and skills for work. Studying Health and Food Technology at Higher or AH level provides challenge in learning and opportunities for personal achievement. Through involvement in health related initiatives in the wider school community and beyond, this curriculum area provides sound knowledge and understanding of some of the current health issues to be addressed in Scotland. The Courses sit in both the Health and Wellbeing and Technology outcomes, aspects of which can be addressed in the course content.

Learning and Teaching

The suggested learning and teaching approaches, for example co-operative learning techniques, critical skills and assessment for learning strategies, encourage candidates to work collaboratively to carry out research and investigative work. It is also important to emphasise the need for candidates to take responsibility for their own learning and develop their ability to work independently. The role of the teacher is to facilitate learning in and between different levels. AH candidates build on their Higher knowledge and understanding, and it can be helpful

for them to participate in the teacher introduction to the Higher course content. This serves as revision and provides a base for building in-depth knowledge and understanding of these areas.

Resources

The list of suggested resources is only intended as a starting point for centres to personalise and is not a definitive list. For example, suggested DVDs may be limited by what is available and the detail in some of the Australian videos may not be wholly appropriate or accurate to the knowledge and content of the course. Centres will have access to different resources and should ensure these are appropriate to the level and content. None of the suggested resources are endorsed in any way by SQA.

Assessment (formative and summative)

Embedding formative assessment is integral to successful learning and teaching, particularly bi-level teaching. For example:

- ◆ using formative assessment activities supported by feedback and feed-forward comment marking will support candidates in recognising their strengths as well as areas for development
- ◆ opportunities for peer and self-assessment activities enable candidates to engage with learning intentions and assessment criteria

Opportunities for candidates to develop skills in answering examination type questions should be provided throughout the course to prepare candidates for summative assessment.

Organisation of the Technological Project and Dissertation

Centres will need to incorporate an appropriate number of hours for the technological project or dissertation.

Once an initial start has been made to the Technological Project and Dissertation, some teachers may prefer to organise work on the Technological Project and AH Dissertation on different days to enable the teacher to focus on the learning and teaching of particular areas of Essential Knowledge for the other group.

At Higher level, each topic for the Technological Project should be considered as a class before pupils are encouraged to choose the topic they are most interested in.

It is recommended that AH candidates visit either the school or an appropriate University library prior to starting the dissertation. Alternatively, arrangements should be made where possible to enable candidates to link remotely with a University library to support their research. Time should be allocated to allow candidates to choose a topic for the dissertation which is of interest to them. Before starting the dissertation, candidates should ensure that there are sufficient credible resources available to assist their research, for example, research papers, literature or policy documents.

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c	Bi-level Teaching Grids Key Context and Content	Higher	Advanced Higher
4	Nutrition — nutrients	✓	✓
5	Nutrition — absorption of nutrients	✓	✓
6	Nutrition — inter-relationship of nutrients	✓	✓
7	Nutrition — effect of storage, preparation and cooking on nutrients (H ONLY)	✓	
8	Dietary Diseases — prevention of / effect on health	✓	✓
9	Nutrients — DRVs / Nutrients effect on health of individuals	✓	✓
10	Current Dietary Advice	✓	✓
11	Product Development / Food Chain — product design	✓	✓
12	Market Research / Food Chain — market research	✓	✓
13	Sensory testing (H ONLY)	✓	
14	Functional properties of food / Food Science — chemical structure	✓	✓
15	Food Science – nature of food constituents in relation to properties (AH ONLY)		✓
16	Factors affecting finished products / Food commodities — composition and properties	✓	✓
17 - 18	Causes of food poisoning & contamination / Food Chain — process of events- food hygiene and safety	✓	✓
19	Food Safety Act	✓	✓
20	Food Hygiene Regulations (including HACCP)	✓	✓
21	Role and responsibilities of EHD	✓	✓
22	Role and responsibilities: DEFRA, SEERAD	✓	✓
23	Role and responsibilities of FSA	✓	✓
24	Food Labelling: current statutory and voluntary (H ONLY)	✓	
24	Consumer in EU / EU Directives	✓	✓
25	Food Politics: food additives, organics, GM foods, irradiated, functional foods etc.	✓	✓
26	Role and responsibilities TSD, Trades Descriptions and other Acts etc. (H ONLY)	✓	
27	Biochemistry: preservation and processing: micro-organisms (AH ONLY)		✓
28	Factors influencing consumer choice of food / Food Politics and Psychology of Food	✓	✓
29	Impact of technological developments on consumer choice of food (H ONLY)	✓	

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 8 hrs		Resource Management (RM): Function and sources of nutrients:	<ul style="list-style-type: none"> ◆ protein, fats, trans fatty acids, carbohydrates, vitamins — A, B complex, C, D, E, minerals — calcium-phosphorous, iron, sodium ◆ water 	<p>DVDs</p> <ul style="list-style-type: none"> ◆ ABCs of vitamins — Viewtech ◆ Board works — Key Stage 3 — Nutrition ◆ Nutrients: the Basics. Boulton Hawker Films <p>www.nutrition.org.uk www.eatwell.gov.uk</p> <p>Textbooks (AH)</p> <ul style="list-style-type: none"> ◆ Food Science, Nutrition and Health Fox and Cameron ISBN 0-343- 60483-2 Arnold ◆ The Science of Food — Gaman and Sherrington ISBN 0-7506-2373-x Heinemann ◆ Nutrition — A Health Promotion Approach Geoffrey P Webb ISBN 978-0-340-93882-9. Hodder Arnold ◆ Health Defence — Dr Paul Clayton ISBN 0-905553-66-7 Accelerated Learning Systems Ltd ◆ Applied Science for Food Studies — Brownsell, Griffith and Jones ISBN 0-582-41367-2 — Longman ◆ The Science and Technology of Foods — RK Proudlove ISBN 1-899-527-20-6 Forbes Publications ◆ The vitamin Strategy A and V Ulene. ISBN 0-915233-94-0 Ulysses Press 	<ul style="list-style-type: none"> ◆ teacher exposition — introductory PowerPoint ◆ students engage in prior reading and note-taking ◆ poster making: illustrations of nutrients, their functions and sources ◆ development of alternative revision materials, eg mind mapping
AH — 8 hrs		RM: Nutrients and their effect on the health and development of individuals:	<p>An in-depth study of nutrients and their functions:</p> <ul style="list-style-type: none"> ◆ main nutrients — protein, fats, carbohydrates ◆ micro-nutrients ◆ anti-oxidants 		

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
<p>H — 2 hrs</p>		<p><i>RM:</i> Factors which assist calcium absorption:</p> <p>Factors which hinder calcium absorption:</p> <p>Factors which assist iron absorption:</p> <p>Factors which hinder iron absorption:</p>	<ul style="list-style-type: none"> ◆ vitamin D ◆ lactose ◆ protein ◆ lack of vitamin D ◆ phytic acid ◆ fibre (dietary)/NSP ◆ fats ◆ oxalic acid Vitamin C ◆ lack of Vitamin C ◆ fibre (dietary)/NSP ◆ phytic acid 	<p>www.nutrition.org.uk</p>	<p>Teacher exposition — introductory PowerPoint.</p>
<p>AH — 2 hrs</p>		<p><i>RM:</i> Nutrients and their effect on the health and development of individuals:</p>	<p>Factors affecting absorption of nutrients.</p>	<p>Textbooks (AH) The Science of Food — Gaman and Sherrington ISBN 0-7506-2373-x Heinemann</p>	

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 2 hrs		RM: Inter-relationship of:	<ul style="list-style-type: none"> ◆ calcium, phosphorous and vitamin D ◆ ACE vitamins ◆ iron, vitamin C and folic acid ◆ vitamin B complex and carbohydrates ◆ iron, fibre (dietary)/NSP and phytic acid ◆ water and fibre (dietary)/NSP 	<p>DVDs Nutrients: their interactions — Boulton Hawker Films</p> <p>Selection of case studies based on inter-relationship of nutrients</p> <p>www.nutrition.org.uk</p>	Paired activity — students plan, prepare and evaluate the suitability of a dish/meal which provides the inter-related nutrients identified in case studies.
AH — 2 hrs		RM: Nutrients and their effect on the health and development of individuals:	Inter-relationship of nutrients	<p>Textbook (AH) Nutrition — A Health Promotion Approach Geoffrey P Webb ISBN 978-0-340-93882-9. Hodder Arnold</p>	

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
<p>H — 4 hrs</p>		<p><i>RM:</i> Effects of storage on nutrients:</p>	<ul style="list-style-type: none"> ◆ deterioration and rancidity of fats when exposed to air ◆ deterioration and oxidation of vitamins ◆ suitable storage methods to reduce loss of nutrients 	<p>DVD - Chemistry of Cooking — classroom video</p> <p>Resources required for investigative work and recording sheets</p>	<p>Practical investigative work to demonstrate the effect of cooking on nutrients. Take photographic evidence at each stage to support discussion.</p> <p>Summarise results through class discussion.</p>
		<p>Effects of preparation on nutrients:</p>	<ul style="list-style-type: none"> ◆ loss of vitamin B complex in milling process ◆ preparation of fats to assist digestion ◆ effects of preparation methods on vitamin C 		
		<p>Effects of cooking on nutrients:</p>	<ul style="list-style-type: none"> ◆ coagulation of protein ◆ breakdown of fatty acids and glycerol ◆ effects of dry heat on starch — dextrinisation ◆ effects of moist heat on starch/solubility ◆ effects of heat on sugar — caramelisation ◆ effects of heat and water on vitamins B complex and C ◆ effects of alkaline solutions on vitamins B complex and C 		

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 10 hrs		<p><i>RM:</i> Prevention of dietary diseases:</p>	<ul style="list-style-type: none"> ◆ anaemia ◆ Coronary heart disease (CHD) ◆ dental caries ◆ diverticulitis ◆ hypertension ◆ obesity ◆ Osteomalacia ◆ Osteoporosis 	<p>DVDs</p> <ul style="list-style-type: none"> ◆ Fries with that — the overweight epidemic. Classroom video ◆ Diet and Disease in Modern Society Viewtech <p>Websites There are many reliable websites which provide up-to-date information to assist students in their research and provide suggested resources. www.nutrition.org.uk www.bhf.org.uk www.nos.org.uk http://www.bda.org</p>	<p>Paired activity – each pair to research one of the dietary diseases and prepare a visual PowerPoint presentation which outlines the key issues. Each pair to deliver a presentation to share information with the group and be prepared to answer questions on their topic.</p> <p>Case studies focusing on different dietary diseases (use newspaper articles).</p>
AH — 10 hrs		<p><i>RM:</i> Nutrients and their effect on the health and development of individuals:</p>	<p>Health and dietary diseases — coronary heart disease; obesity; hypertension; cancer; diabetes; anaemia; bowel disorders; osteomalacia; osteoporosis and dental decay.</p>	<p>Textbooks (AH) Diet and Nutrition – B Pyper- ISBN 0- 7487-5325-7 Stanley Thornes Essentials of Human Nutrition – J Mann & A S Truswell – ISBN 978-0-19-929097-0 Oxford University Press</p> <p>See Briefing Papers and Task Force Reports at www.nutrition.org.uk</p>	

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
<p>H — 10 hrs</p>		<p><i>RM:</i> The use of Dietary reference values (DRV):</p> <p>The use of dietary reference values and an awareness of their dietary needs for:</p>	<ul style="list-style-type: none"> ◆ low reference nutrient intake (LRNI) ◆ estimated average requirements (EAR) ◆ reference nutrient intake (RNI) ◆ safe intake <p>Relating to the intake of energy, proteins, fats and fatty acids, starches and sugars, NSP, vitamins A, B1, B2, Folic acid, C, D, and E.</p> <p>Linking to: Age, physical activity (PAL), gender, basal metabolism, special circumstances:</p> <ul style="list-style-type: none"> ◆ pregnancy ◆ convalescents ◆ weight reduction ◆ vegetarians <p>Specified groups:</p> <ul style="list-style-type: none"> ◆ infants/young children ◆ teenagers ◆ adults ◆ elderly 	<p>British Nutrition Foundation — www.nutrition.org.uk</p> <p>Food in Focus CD Rom or alternative nutritional analysis programme</p> <p>DVD</p> <ul style="list-style-type: none"> ◆ Nutrition for Active Health – Viewtech 	<p>Design a suggested day's diet for a specific target group taking nutritional requirements into account. Evaluate its suitability by carrying out nutritional analysis using a computer programme.</p> <p>Make suggestions for modifications necessary to meet nutritional requirements.</p>
<p>AH — 8 hrs</p>		<p><i>RM:</i> Nutrients and their effects on the health and development of individuals:</p>	<p>The effect on the health and development of individuals at different life stages/special circumstances — pregnancy and lactation, infant/young children, teenagers, adults, elderly, vegetarians, weight reduction, sports performance.</p>	<p>Textbooks (AH) Nutrition — a health promotion approach Geoffrey P Webb ISBN 978-0-340-93882-9. Hodder Arnold Essentials of Human Nutrition — J Mann & A S Truswell — ISBN 978-0-19-929097-0 Oxford University Press</p>	

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 6 hrs		<p><i>RM:</i> Current dietary advice The Scottish Dietary Targets Students should have an awareness of the main issues from: (i) The Scottish Diet Action Plan (ii) Hungry for Success</p>	<ul style="list-style-type: none"> ◆ practical ways of meeting the dietary targets ◆ the use of the dietary targets to influence the proportions of ingredients ◆ adaptation of products to meet dietary targets ◆ the contribution of the dietary targets to good health ◆ acknowledgement of the contribution food manufacturers make to dietary targets by producing pre-packed foods which will help consumers to meet the targets ◆ cooking methods to promote dietary targets 	<p>Supermarket information leaflets</p> <p>Food Standards Agency leaflets and info at www.food.gov.uk</p>	<p>Arrange a visit to a supermarket to carry out a survey to identify products which assist consumers in meeting dietary targets.</p> <p>Research: Group work to research the implementation/success of Healthy Eating in Schools initiative. Design a questionnaire which will help the group find out how successful this initiative has been at improving the provision of healthy food in schools.</p>
AH — 5hrs		<p><i>RM:</i> Food Politics:</p>	<p>Food, nutrition and health issues/policies in Scotland and in the UK — current reports should be accessed, eg Hungry for Success, Eating for Health — meeting the Challenge, Healthy Eating in Schools, Food Standard Agency reports.</p>	<p>Resources (AH) Review of the Scottish Diet Action Plan: Progress and Impacts 1996 — 2005. ISBN 1 — 84485-378-0. Published by Health Scotland.</p> <p>Healthy Eating in Schools — a guide to implementing the nutritional requirements for food and drink in schools (Scotland) regulations 2008</p> <p>http://www.scotland.gov.uk/Publications/2008/09/12090355/2</p> <p>http://www.scotland.gov.uk/Publications/Recent</p>	

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 7 hrs		<p><i>RM:</i> Product development strategy — Identifying needs and developing concepts for products:</p>	<ul style="list-style-type: none"> ◆ concept generation ◆ concept screening ◆ prototype production ◆ product testing ◆ information and advertising materials designed for packaging ◆ first production run ◆ marketing plan ◆ launch <p>Investigation of existing products by disassembly.</p>	<p>Planning pro-forma showing product development strategy</p> <p>DVDs Board works Key Stage 3 — Manufacturing Food</p> <p>Board works Key Stage 3 — Designing Food Products</p> <p>Board works Key Stage 4 — Evaluation Techniques</p> <p>Board works Key Stage 4 — Quality Control</p>	<p>Group activity — each group to design one visual PowerPoint slide to illustrate 1 of the 8 stages of product development. Collate the slides and print a handout for each pupil's folder and a poster (1 x 8 pages) for the classroom wall.</p> <p>Group activity to develop a simple product, eg bread based snack.</p> <p>Disassembly of three similar products, eg pizzas.</p>
AH — 3hrs		<p><i>RM:</i> The Food Chain:</p>	<p>Product design and quality to include:</p> <ul style="list-style-type: none"> ◆ stages in product development (concept generation, concept screening, development of prototype, product testing, packaging design, first production run, marketing plan, product launch) ◆ quality assurance and quality control ◆ use of computer technology in food production 		

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 3 hrs		RM: Market research:	Reasons why manufacturers use market research. Benefits of market research to manufacturer/retailer. Types of market research: <ul style="list-style-type: none">◆ direct and indirect◆ qualitative and quantitative	DVD Marketing — A Food Marketing Case Study — Viewtech www.scre.ac.uk for publications to give guidance on market research methods	Paired activity — construct a questionnaire for use by a manufacturer who wishes to develop a new product. Carry out survey, collate results and draw conclusions. Discuss with rest of group.
AH — 3 Hrs		RM: The Food Chain:	Product design and quality to include: Market research (reasons for use, benefits to manufacturer, and methods of obtaining data).		

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 5 hrs		RM: Sensory Testing:	<p>Reasons for manufacturers carrying out sensory testing:</p> <p>Sensory tests —</p> <p>Preference:</p> <ul style="list-style-type: none"> ◆ rating ◆ ranking <p>Discrimination tests:</p> <ul style="list-style-type: none"> ◆ paired comparison test ◆ duo-trio test ◆ triangle test ◆ taste threshold test ◆ profiling test <p>Conducting sensory tests to determine the effects of range and proportion of ingredients on appearance, texture, flavour, aroma, overall acceptability, quality and preference.</p>	<p>A range of food products, eg types of apples, a range of similar recipe ready meals, organic and non-organic foods.</p> <p>DVDs Sensory Analysis CD-ROM — Birchfield</p> <p>Board works Key Stage 3 — Evaluating Food Products</p> <p>Board works Key Stage 4 — Evaluation Techniques</p>	<p>Sensory testing using a variety of products to focus on each preference and discrimination test.</p> <p>Display results using IT programme, eg Excel or Birchfield.</p>

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 6 hrs		<p><i>RM:</i> Functional properties of food:</p>	<ul style="list-style-type: none"> ◆ aerating: <ul style="list-style-type: none"> — mechanical ◆ binding ◆ crystallisation ◆ emulsifying ◆ fermentation ◆ gelatinisation ◆ hydrogenating ◆ preserving: <ul style="list-style-type: none"> — salt — sugar — pH — dehydrating — use of temperature ◆ shortening ◆ sweetening: <ul style="list-style-type: none"> — fresh/dried fruits (intrinsic sugars) — sugar, non-milk extrinsic sugar (NMES) — sugar substitutes 	<p>DVDs Chemistry of Cooking — Classroom video</p> <p>Food Testing; Working with Yeast — Viewtech</p> <p>Functional Properties of Food — Birchfield Interactive Plc</p> <p>Birchfield Digital Media Package for Food Technology — Functional Properties</p> <p>Board works Key Stage 3 — Food Types and Properties</p> <p>Board works Key Stage 4 — Structures of food</p> <p>Textbooks Understanding Ingredients — A Barnett ISBN 0-435-42827-6. Heinemann</p>	<p>Practical activities to demonstrate the functional properties of food, eg:</p> <ul style="list-style-type: none"> ◆ sauce making — gelatinisation ◆ bread making — fermentation ◆ tablet making — crystallisation <p>Take photographs of activities to use in revision/discussion.</p> <p>It might be possible to set up a reciprocal arrangement by inviting a chemistry teacher to deliver this section in return for a practical session for chemistry pupils in the Home Economics department.</p>
AH — 2 hrs		<p><i>RM:</i> Food Science — the chemical structure of the main nutrients:</p> <p>AH continued on next page</p>	<p>The chemical structure of:</p> <ul style="list-style-type: none"> ◆ carbohydrates (sugar, starch, Non Starch Polysaccharides) — monosaccharides, disaccharides and polysaccharides ◆ fats and oils — fatty acids and glycerol; unsaturated, monounsaturated, poly unsaturated; essential fatty acids; trans and cis fatty acids ◆ proteins — amino acids 	<p>Textbooks (AH) The Science of Food — Gaman and Sherrington ISBN 0-7506-2373-x Heinemann Applied Science for Food Studies — Brownsell, Griffith and Jones ISBN 0-582-41367-2 — Longman</p>	

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
AH — 4 hrs		<p><i>RM:</i> Food Science — the nature of food constituents in relation to their properties and uses in food manufacture:</p>	<p>The properties and uses of:</p> <ul style="list-style-type: none"> ◆ carbohydrates — solubility, inversion, crystallisation, caramelisation, retro-gradation of starch pectin gel formation ◆ fats and oils — melting characteristics, plasticity related to creaming and shortening properties, hydrogenation of oils, smoke point related to uses as a cooking medium, colloidal systems, emulsifying agents and stabilisers, hydrolytic and oxidative rancidity ◆ proteins — colloidal systems, denaturation and factors affecting it, gels and gelatine, Maillard reaction 	<p>AH textbooks The Science of Food — Gaman and Sherrington ISBN 0-7506-2373-x Heinemann</p> <p>Applied Science for Food Studies — Brownsell, Griffith and Jones ISBN 0-582-41367-2 — Longman</p>	<p>Practical activities to build on knowledge of functional properties gained at Higher level.</p>

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 5 hrs		<p><i>RM:</i> Factors affecting finished products:</p>	<ul style="list-style-type: none"> ◆ type of ingredients ◆ proportion of ingredients ◆ processing of ingredients ◆ cooking time and temperature <p>Effect of:</p> <ul style="list-style-type: none"> ◆ light ◆ heat ◆ pH 	<p>Birchfield Digital Media Package for Food Technology — Functional Properties</p> <p>Understanding Ingredients — A Barnett ISBN 0-435-42827-6 Heinemann</p>	<p>Practical activities — factors affecting finished products eg proportion of fat/sugar and effect on finished products.</p>
AH — 6 hrs		<p><i>RM:</i> Food Commodities:</p>	<p>Composition and properties of the following goods in raw and cooked state:</p> <ul style="list-style-type: none"> ◆ fruit and vegetables — structure and texture; changes during ripening and cooking; plant pigments and enzymic browning; sensory qualities; relationship to health ◆ meat and fish — structure and texture; post-mortem changes; changes during cooking; meat and fish colour; meat tenderness; sensory qualities, relationship to health ◆ dairy food, milk and milk products and eggs — constituents; uses in food preparation; changes during cooking; sensory qualities; relationship to health ◆ Cereals and baked goods — types, function and uses of: rice and pasta, flour, fats, and shortenings, sugar, raising agents; changes during cooking, sensory qualities, relationship to health 	<p>Textbooks (AH)</p> <p>The Science of Food — Gaman and Sherrington ISBN 0-7506-2373-x Heinemann</p> <p>Food Science, Nutrition and Health — Fox and Cameron ISBN 0-343- 60483-2 Arnold</p> <p>Essentials of Human Nutrition — J Mann & A S Truswell — ISBN 978-0-19-929097-0 Oxford University Press</p>	<p>Pupils research and prepare a visual PowerPoint presentation for each of the commodities to illustrate their EK notes. Pupils only use key phrases in presentation and illustrate using copyright free photos. Presentations can be saved to memory sticks for revision. Pupils present PowerPoint's to teacher.</p>

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 8 hrs		<p><i>RM:</i> Causes of food poisoning:</p> <p>Causes of contamination and cross contamination:</p> <p>AH on next page</p>	<p>Bacterial food poisoning, spores, toxins. Conditions for growth of bacteria:</p> <ul style="list-style-type: none"> ◆ warmth ◆ food ◆ moisture ◆ time ◆ oxygen (aerobic and anaerobic) ◆ pH levels <p>Sources, symptoms and control measures for the following:</p> <p>Food poisoning:</p> <ul style="list-style-type: none"> ◆ Salmonella ◆ Staphylococcus aureus ◆ Clostridium perfringens ◆ Bacillus cereus <p>Food borne disease:</p> <ul style="list-style-type: none"> ◆ Campylobacter enteritis ◆ Listeriosis ◆ Ecoli 0157 ◆ viral food poisoning ◆ chemical food poisoning ◆ vegetable food poisoning ◆ reasons for the increase in food poisoning <p>Definition, causes and preventative measures in terms of:</p> <ul style="list-style-type: none"> ◆ physical contamination ◆ personal hygiene ◆ kitchen hygiene ◆ preparation of food ◆ correct temperature for heating and re-heating of food (please consult REHIS handbook) ◆ storage of food 	<p>Beating Bacteria: Users Guide — Viewtech</p> <p>The Intermediate Food Hygiene Handbook for Scotland — The Royal Environmental Health Institute of Scotland</p> <p>Board works Key Stage 3 — Food Safety and Hygiene</p> <p>(DVD - Food safety the usual suspects)</p> <p>An Interactive Food Hygiene Trainer programme available in department may be used for revision.</p>	<p>Group project — to develop and produce a 'Guide to Safe Food' in leaflet, poster form.</p> <p>Jigsaw class into groups/pairs — each pair to research and illustrate sources, symptoms and control measures for a given bacteria and present findings to rest of class.</p> <p>Class to produce an informative video/presentation on the key food hygiene messages (eg The four Cs) for a given audience, eg Higher H&FT students, Int 1 Hospitality students which involves them researching and illustrating eg conditions for growth of bacteria and appropriate preventative measures in food preparation.</p>

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
AH — 3 hrs		RM: The Food Chain:	<p>The process of events from production of food through to its consumption to include:</p> <ul style="list-style-type: none"> ◆ food hygiene and safety issues at each stage in the food chain: <ul style="list-style-type: none"> — primary producers, primary/initial processing, final/secondary processing or manufacturing, transportation, retail, consumer to include: — types of bacteria and possible sources which may increase the risk of food poisoning within the food chain — control and prevention of microbial growth throughout the food chain 	<p>Text books (AH)</p> <p>Applied Science for Food Studies — Brownsell, Griffith and Jones ISBN 0-582-41367-2 — Longman</p> <p>www.sustainweb.org — website of Sustain; The Alliance for better food and farming</p>	<ul style="list-style-type: none"> ◆ see page 14 ◆ produce a summary table of the food hygiene and safety issues at each stage in the food chain

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 2 hrs		Consumer Studies (CS): Food Safety Act 1990:	<p>Covers four main areas:</p> <ul style="list-style-type: none"> ◆ labelling ◆ additives and contaminants ◆ composition (or content) ◆ public health and hygiene <p>It is a criminal offence to:</p> <ul style="list-style-type: none"> ◆ sell, or possess for sale, food which does not comply with food safety requirements; ◆ render food injurious to health ◆ sell food which is not of the nature or substance or quality demanded; ◆ falsely or misleadingly describe or present food <ul style="list-style-type: none"> ◆ food premises must be registered with the local authority ◆ all food handlers must be trained/wear suitable clothing ◆ improvement notices can be issued to premises failing to comply with the law ◆ defence of 'due diligence' 	FSA leaflets	Design a leaflet web page to inform local food retail outlets of their responsibilities under the Food Safety Act.
AH — 1 hrs		<i>RM:</i> The Food Chain:	Food safety legislation such as Food Safety Act 1990		

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H — 2 hrs		CS: The Food Hygiene (Scotland) Regulations 2005:	<p>The Regulations cover three main areas:</p> <ul style="list-style-type: none"> ◆ Hazard analysis and risk assessment (HACCP) ◆ General food hygiene ◆ Temperature control of food likely to support the growth of harmful bacteria <p>HACCP</p> <ol style="list-style-type: none"> 1 conduct a hazard analysis 2 decide on the Critical Control Points 3 establish a tolerance level 4 establish a monitoring system 5 establish what action should be taken to correct hazard if it occurs 6 establish procedures to check that the HACCP system works effectively 7 record keeping and review of procedures 	<p>DVDs</p> <p>HACCP in Action — Food Safety Case Studies. Classroom video</p> <p>Implementing a Food Safety Programme — HACCP in the workplace. Boulton Hawker Films</p> <p>Food Safety — the Usual Suspects – Classroom video</p> <p>Birchfield Digital Media Package for Food Technology — HACCP</p> <p>Board works Key Stage 4 — Risk Assessment and HACCP</p> <p>Textbooks</p> <p>Food Hygiene for Scottish Qualifications, A MacGregor ISBN 978-0-340-92810-3 Hodder Gibson</p> <p>The Intermediate Food Hygiene Handbook for Scotland — The Royal Environmental Health Institute of Scotland</p>	<p>Case Study, eg Imagine you are the owner of 'The Sandwich Market' which supplies many outlets with Coronation Chicken wholemeal sandwiches. Set up a Hazard Analysis Critical Control Point (HACCP) system for this business.</p>
AH — 2 hrs		RM: The Food Chain:	<p>Food Safety Legislation such as The Food Hygiene (Scotland) Regulations 2006.</p> <p>The Hazard Analysis Critical Control Point system.</p>		

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H — 2 hrs		<p>CS: Role and responsibilities of Environmental Health Departments (EHD):</p> <p>Role and responsibilities of the Meat Hygiene Service (MHS):</p>	<ul style="list-style-type: none"> ◆ enforcing the Food Safety Act 1990 ◆ visiting food businesses ◆ identifying potential hazards ◆ carrying out risk assessments ◆ issuing of improvement notices ◆ taking samples of food to be tested ◆ closing down of premises ◆ giving advice/training/support <p>Enforcement of official controls in approved meat plants.</p>	<p>The Intermediate Food Hygiene Handbook for Scotland — The Royal Environmental Health Institute of Scotland</p>	<p>Case Study relating to Food Safety Act 1990 and an EHO visit to an unhygienic food retail outlet.</p> <p>Visit from EHO for Q&A session.</p>
AH — 1 hrs		<p>RM: The Food Chain:</p>	<p><i>More detailed knowledge</i> Role of the Environmental Health Department.</p>		

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H — 2 hrs		<p>CS: Role and responsibilities of Department for Environment, Food and Rural Affairs (DEFRA) and SEERAD (Scottish Executive Environment and Rural Affairs Department):</p> <p>Role and responsibilities of SEERAD:</p>	<ul style="list-style-type: none"> ◆ composition of food ◆ negotiation with the EU on the Common Agricultural Policy ◆ new product processes ◆ promoting better use of natural resources ◆ providing guidance and information for food producers ◆ radiation contaminants <p>General overview and information on protection of wildlife and countryside. Information and guidance on environmental protection.</p> <p>Performs regulatory function regarding all public and private water supplies in Scotland.</p>	<p>Leaflets/access to websites, eg http://www.defra.gov.uk</p>	<p>Individual activity — students are given a series of questions to answer which involve detailed searching of DEFRA website to identify key roles and responsibilities. Students should provide a report to cross check with peers, eg 'give one get one answer' and repeat process until all students have the full range of answers.</p>
AH — 2 hrs		<p>RM: Food Politics:</p>	<p><i>More detailed knowledge</i> The role of DEFRA/SEERAD</p>		

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H — 2 hrs		CS: Role and responsibilities of FSA:	<ul style="list-style-type: none"> ◆ protection of public health in relation to food hygiene and food safety ◆ approval of meat, plants and policy and legislation relating to meat hygiene and Transmissible Spongiform Encephalopathy (TSE) ◆ regulator for novel and genetically modified food ◆ policy and legislation relating to animal feeding stuffs ◆ licensing and inspection of food irradiation facilities ◆ monitoring the use of food additives ◆ policy, legislation and guidance on food labelling ◆ advice about the nutrient content of foods and dietary issues ◆ controls of composition and sale of natural mineral water, spring water, bottled water 	www.food.gov.uk	<p>As for DEFRA: Individual activity — students are given a series of questions to answer which involve detailed searching of FSA website to identify key roles and responsibilities. Students should provide a report to cross check with peers, eg ‘give one get one answer’. Students then pair up and repeat process until all students have full range of answers.</p> <p>Poster making — groups or pairs produce a poster providing visual illustration of FSA role and responsibilities. More detailed for AH.</p>
AH — 2 hrs		RM: Food Politics	<i>More detailed knowledge</i> The role of the FSA		

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H — 2 hrs		<p>CS: Current statutory food labelling:</p> <p>Current voluntary food labelling:</p>	<p>Relating to: Information on food labels</p> <ul style="list-style-type: none"> ◆ nutritional information ◆ bar codes ◆ customer care information ◆ environmental information/disposal 	<p>Birchfield Digital Media Package for Food Technology — Food Labelling</p> <p>Selection of food packaging or labels</p> <p>www.food.gov.uk</p>	<p>Design a food label or produce an annotated poster using an existing food label to identify statutory and current voluntary food labelling information.</p>

Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 2 hrs		<p>CS: The consumer within the European dimension:</p>	<p>Definition of a European Directive Examples of legislation covered by European directives: 'e' mark on pre-packed foods Food labelling including additives identified by 'E' numbers</p>		
AH — 1 hrs		<p>RM: Food Politics:</p>	<p>EU directives</p>	<p>http://ec.europa.eu/food/food/labellingnutrition/index_en.htm</p>	<p>AH students explore website.</p>

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H — 8 hrs		<p>CS: Food Politics:</p> <p>Impact of tech developments on consumer choice of food:</p>	<ul style="list-style-type: none"> ◆ use of food additives ◆ genetically modified foods (GM) ◆ organic foods ◆ irradiated foods ◆ 'Fair trade'™ products <p>Functional foods</p>	<p>H/AH Genetically Modified Foods — Viewtech</p> <p>Food Additives — Classroom video Board works Key Stage 3 — Modern Food Materials Board works Key Stage 4 — Smart and Modern Ingredients</p> <p>Leaflets/access to websites, eg http://www.defra.gov.uk/farm/organic/consumers/faq.htm</p>	<p>Intro to key points:</p> <p>Sensory testing:</p> <ul style="list-style-type: none"> ◆ to carry out evaluation of a range of organic versus non organic foods ◆ or 'Fair trade'™ products ◆ or functional foods
AH — 8 hrs		<p>RM: Biochemistry, preservation and processing — part 2:</p>	<ul style="list-style-type: none"> ◆ food additives — preservation; anti-oxidants; emulsifiers; specific commercial additives; ie anti-foaming agents; colour; bleaches; flavour enhancers; nutritional additives ◆ the benefits of additives and safeguards regarding their use ◆ organic foods ◆ genetic modification of foods ◆ food irradiation ◆ functional food (health promoting food) ◆ fast foods <ul style="list-style-type: none"> — reasons for growth of the fast food industry — role of technology — impact of fast food on food habits in a social context 	<p>Board works Key Stage 4 — Additives</p> <p>Textbooks (AH) The Shoppers Guide to Organic Food — L Brown — ISBN 1-85702-840-6 Bad Food Britain: How a Nation Ruined its Appetite — J Blythman- ISBN 978 – 0-00-721994-0 Fourth Estate Ltd Eat Your Heart Out- FG Lawrence ISBN 987-0-141-02601-5. Penguin Food File — Facts, issues and controversies- ISBN 978-1-905600-06-9 Carel Press Ltd</p>	<p>Plus AH Write an article for a monthly food magazine providing the pros and cons of organic foodstuffs for consumers.</p> <p>Alternatively, write an informative article for FSA news.</p>

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Level & Week(s)/ hours allocated	EK	Context/Content	Elaboration	Suggested resources	Suggested learning and teaching approaches
H — 4 hrs		<p>CS: Role and responsibilities of Trading Standards Departments/ Consumer Protection Departments (TSD):</p> <p>The difference between civil and criminal law:</p> <p>Trade Descriptions Act 1968:</p> <p>Trade Descriptions Act (Place of Production) (Marking) order 1988:</p> <p>Sale and Supply of Goods Act 1994:</p>	<ul style="list-style-type: none"> ◆ enforcing the Food Safety Act 1990 where it deals with the labelling of food ◆ enforcing the Weights and Measures Act 1963/Weights and Measures Act 1995 ◆ enforcing the Trade Descriptions Act 1968 ◆ responsible for ensuring that all food is sold in metric weights ◆ testing samples of food and drink for safety and quality <p>Civil law:</p> <ul style="list-style-type: none"> ◆ deals with the rights of one individual to another <p>Criminal law:</p> <ul style="list-style-type: none"> ◆ concerns with protecting the community as a whole <p>It is a criminal offence to:</p> <ul style="list-style-type: none"> ◆ falsely describe goods ◆ to mislead consumers about services <p>If food is presented in such a way as to give a misleading impression of where it was manufactured or produced it must be clearly labelled showing its country of origin or production.</p> <p>There is a contract of sale between the seller and buyer:</p> <ul style="list-style-type: none"> ◆ goods must be of a 'satisfactory quality' ◆ goods must 'fit the description given' ◆ goods must 'be fit for their purpose' as made known to the seller ◆ consumers have a reasonable period of time to accept the goods or reject them 	<p>Office of Fair Trading (OFT) website www.oft.gov.uk</p> <p>Leaflets, booklets such as Skills to go — Teachers Toolkit. Teacher's notes: Buying and selling</p> <p>Consumer rights and advice www.consumerdirect.gov.uk www.adviceguide.org.uk/scotland.htm</p> <p>Local Consumer Advice centres</p> <p>Internet safety www.getsafeonline.org www.apacs.org.uk</p> <p>Scottish Consumer Council www.scotconsumer.org</p>	<ul style="list-style-type: none"> ◆ leaflet/presentation for a given target group ◆ skills to go — Teachers Toolkit ◆ teachers notes: Buying and selling ◆ give ideas such as: <ul style="list-style-type: none"> — buying and selling bingo game — posters to highlight key learning on consumer rights targeted at a specific age group — case studies — true/false cards ◆ speaker from TDS/Consumer protection department

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AH — 4 hrs		RM: Biochemistry, preservation and processing:	<ul style="list-style-type: none"> ◆ the role of micro-organisms and enzymes in the development of flavours and textures in food ◆ beneficial effects of micro-organisms and enzymes related to specific foodstuffs: cheese, yoghurt, alcoholic drinks, bread ◆ adverse effect of micro-organisms and enzymes in the development of flavours and textures in food ◆ physical and chemical changes in foodstuffs after preservation affecting structure, texture, colour and nutritive value 	<p>Textbooks (AH) Essentials of Human Nutrition — J Mann & A S Truswell – ISBN 978-0-19-929097-0 Oxford University Press Food Science, Nutrition and Health - Fox and Cameron ISBN 0-343- 60483-2 Arnold The Science of Food- Gaman and Sherrington ISBN 0-7506-2373-x Heinemann</p>	Individual research.

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H — 4 hrs		CS: Factors which influence consumer choice of food:	<ul style="list-style-type: none"> ◆ advertising/marketing/promotional techniques ◆ available income ◆ climatic conditions ◆ cultural and religious influences ◆ lifestyle ◆ nutritional knowledge ◆ environmental issues: organic produce, energy saving, cruelty free, packaging to reduce pollution ◆ foreign travel ◆ geographical location/access to shops ◆ health ◆ peer pressure ◆ personal taste ◆ preparation and cooking equipment available ◆ preparation and cooking skills priorities ◆ time available for preparation/cooking/eating ◆ range of retail outlets selling food ◆ shift patterns/working hours ◆ technological innovations ◆ shopping — on-line shopping 	<p>Board works Key Stage 4 — Social and Economic Issues</p> <p>Your Food: Whose Choice — ISBN 0-11-7015776 HMSO PUBLICATION National Consumer Council</p>	<p>Group work to investigate the factors influencing choice of foods.</p> <p>Group presentations to share results and generate discussion.</p>
AH — 4 hrs		<p>RM: Food Politics:</p> <p>Psychology of food:</p>	<p>The impact of nutrition/health, culture, social, economic and environment factors (eg Fair Trade) on food availability, selection and consumption patterns.</p> <ul style="list-style-type: none"> ◆ influence on food product development ◆ influence on consumers ◆ consumers attitude to food issues ◆ role/influence of the media ◆ consumer behaviour 	<p>Textbook (AH) Nutrition — a health promotion approach Geoffrey P Webb ISBN 978-0-340-93882-9. Hodder Arnold</p> <p>www.sustainweb.org</p>	

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H — 10 hrs		CS: The impact of technological developments on consumer choice of food:	<ul style="list-style-type: none"> ◆ all except functional foods ◆ chilling/cook-chill products ◆ extrusion cooking ◆ fat replacers ◆ freezing ◆ freeze drying ◆ hydroponics ◆ modified atmosphere packaging (MAP) ◆ myco-proteins ◆ sugar substitutes ◆ textured vegetable proteins (TVP) ◆ ultra High Temperature/Ultra Heat Treated (UHT) products ◆ vacuum packing 	<p>DVD Investigating Food Preservation — Viewtech</p> <p>Board works Key Stage 4 — Preservation</p>	<ul style="list-style-type: none"> ◆ supermarket visit to find examples of each technological development ◆ practical activities to compare sugar substitute recipes with sugar recipes ◆ revision of sensory testing ◆ tasting and comparison of myco-protein products and TVP products ◆ tasting and nutritional comparison of burgers — Quorn, TVP and meat