

# Food and Technology

Victorian Certificate of Education Study Design

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Latoya BARTON  
*The sunset* (detail)  
from a series of twenty-four  
9.0 x 9.0 cm each, oil on board



Tarkan ERTURK  
*Visage* (detail)  
201.0 x 170.0 cm  
synthetic polymer paint, on cotton duck



Liana RASCHILLA  
*Teapot* from the *Crazy Alice* set  
19.0 x 22.0 x 22.0 cm  
earthenware, clear glaze, lustres



Nigel BROWN  
*Untitled physics* (detail)  
90.0 x 440.0 x 70.0 cm  
composition board, steel, loudspeakers,  
CD player, amplifier, glass



Kate WOOLLEY  
*Sarah* (detail)  
76.0 x 101.5 cm, oil on canvas



Chris ELLIS  
*Tranquility* (detail)  
35.0 x 22.5 cm  
gelatin silver photograph



Christian HART  
*Within without* (detail)  
digital film, 6 minutes



Kristian LUCAS  
*Me, myself, I and you* (detail)  
56.0 x 102.0 cm  
oil on canvas



Merryn ALLEN  
*Japanese illusions* (detail)  
centre back: 74.0 cm, waist (flat): 42.0 cm  
polyester cotton



Ping (Irene) VINCENT  
*Boxes* (detail)  
colour photograph



James ATKINS  
*Light cascades* (detail)  
three works, 32.0 x 32.0 x 5.0 cm each  
glass, fluorescent light, metal



Tim JOINER  
*14 seconds* (detail)  
digital film, 1.30 minutes



Lucy McNAMARA  
*Precariously* (detail)  
156.0 x 61.0 x 61.0 cm  
painted wood, oil paint, egg shells, glue, stainless steel wire

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# Contents

5	<b>Important information</b>
7	<b>Introduction</b>
	Rationale
	Aims
8	Structure
	Entry
	Duration
	Changes to the study design
9	Monitoring for quality
	Safety
	Use of information and communications technology
	Key competencies and employability skills
	Legislative compliance
10	<b>Assessment and reporting</b>
	Satisfactory completion
	Authentication
	Levels of achievement
12	<b>Unit 1: Properties of food</b>
	Areas of study and Outcomes
14	Assessment
15	<b>Unit 2: Planning and preparation of food</b>
	Areas of study and Outcomes
17	Assessment
18	<b>Unit 3: Food preparation, processing and food controls</b>
	Areas of study and Outcomes
21	Assessment
23	<b>Unit 4: Food product development and emerging trends</b>
	Areas of study and Outcomes
26	Assessment
29	<b>Advice for teachers</b>
	Developing a course
31	Use of information and communications technology
	Glossary
34	Key competencies and employability skills
	Learning activities
50	School-assessed coursework
52	Suitable resources

## **IMPORTANT INFORMATION**

### **Accreditation period**

Units 1–4: 2006–2010

The accreditation period commences on 1 January 2006.

### **Other sources of information**

The *VCAA Bulletin* is the only official source of changes to regulations and accredited studies. The *VCAA Bulletin*, including supplements, also regularly includes advice on VCE studies. It is the responsibility of each VCE teacher to refer to each issue of the *VCAA Bulletin*. The *VCAA Bulletin* is sent in hard copy to all VCE providers. It is available on the Victorian Curriculum and Assessment Authority's website at [www.vcaa.vic.edu.au](http://www.vcaa.vic.edu.au)

To assist teachers in assessing school-assessed coursework in Units 3 and 4, the Victorian Curriculum and Assessment Authority publishes an assessment handbook that includes advice on the assessment tasks and performance descriptors for assessment.

The current year's *VCE and VCAL Administrative Handbook* contains essential information on assessment and other procedures.

### **VCE providers**

Throughout this study design the term 'school' is intended to include both schools and other VCE providers.

### **Photocopying**

VCE schools only may photocopy parts of this study design for use by teachers.

# Introduction

## **RATIONALE**

Food and Technology is engaging and challenging. It enables students to develop a theoretical understanding of the relationship between food and technology, and practical skills in the application of this understanding.

The food sector is dynamic, diverse and creative. Innovative food products are continually being introduced into the marketplace in response to changing social, economic and environmental needs of society. Technology plays an important role in food product development and the way food is produced, processed, packaged and marketed.

An understanding of the links between food, food processing, nutrition, health and well-being is a high priority in contemporary society. The study of Food and Technology challenges students to make these links and provides them with the opportunities to acquire knowledge and skills to make informed choices when selecting, storing, purchasing, preparing and consuming foods that will contribute to a healthy life style.

Through the study of Food and Technology, students will develop knowledge of the functional, sensory, physical and chemical properties of food and will be able to apply this knowledge when using food in a practical situation. They will develop and apply the knowledge and skills for safe and hygienic work practices and food preparation techniques. They will use the design process, critical thinking and problem-solving skills to develop food products to suit specific situations or to meet the needs of individual consumers and their lifestyles. In this process, they will develop independent and cooperative learning skills.

The study may also provide a foundation for exciting pathways to food science and technology, consumer science, home economics, education, the hospitality and food manufacturing industries, and nutrition and health studies.

## **AIMS**

This study is designed to enable students to:

- extend their understanding of food, and its role in contemporary society;
- develop an understanding of the properties of food and the links between theoretical knowledge and application of practical skills;

- acquire and apply knowledge of the principles of food hygiene and safe food handling;
- acquire and apply knowledge in preparation and processing of food;
- acquire and apply knowledge in the selection and safe use of tools and equipment in food preparation and processing;
- understand the role of technology in food product development and in food preparation, processing and packaging;
- understand national, state and local food laws and standards and their contribution to a safe food supply;
- develop an understanding of current trends in food and technology and their relevance to the food consumer;
- develop and use critical thinking and problem-solving skills in the application of the design process to achieve solutions related to food;
- understand technological developments in ingredients, processing techniques, tools and equipment;
- analyse the supply chain of food and factors that impact on food products available to consumers;
- understand the processes involved in designing and marketing food products.

## STRUCTURE

The study is made up of four units. Each unit deals with specific content and is designed to enable students to achieve a set of outcomes. Each outcome is described in terms of key knowledge and skills.

## ENTRY

There are no prerequisites for entry to Units 1, 2 and 3. Students must undertake Unit 3 prior to undertaking Unit 4. Units 1 to 4 are designed to a standard equivalent to the final two years of secondary education. All VCE studies are benchmarked against comparable national and international curriculum.

## DURATION

Each unit involves at least 50 hours of scheduled classroom instruction.

## CHANGES TO THE STUDY DESIGN

During its period of accreditation minor changes to the study will be notified in the *VCAA Bulletin*. The *VCAA Bulletin* is the only source of changes to regulations and accredited studies and it is the responsibility of each VCE teacher to monitor changes or advice about VCE studies published in the *VCAA Bulletin*.

## MONITORING FOR QUALITY

As part of ongoing monitoring and quality assurance, the Victorian Curriculum and Assessment Authority will periodically undertake an audit of Food and Technology to ensure the study is being taught and assessed as accredited. The details of the audit procedures and requirements are published annually in the *VCE and VCAL Administrative Handbook*. Schools will be notified during the teaching year of schools and studies to be audited and the required material for submission.

## SAFETY

This study may involve the handling of potentially hazardous substances and/or the use of potentially hazardous equipment. It is the responsibility of the school to ensure that duty of care is exercised in relation to the health, hygiene and safety of all students undertaking the study.

## USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In designing courses for this study teachers should incorporate information and communications technology where appropriate and applicable to the teaching and learning activities. The Advice for Teachers section provides specific examples of how information and communications technology can be used in this study.

## KEY COMPETENCIES AND EMPLOYABILITY SKILLS

This study offers a number of opportunities for students to develop key competencies and employability skills. The Advice for Teachers section provides specific examples of how students can demonstrate key competencies during learning activities and assessment tasks.

## LEGISLATIVE COMPLIANCE

When collecting and using information, the provisions of privacy and copyright legislation, such as the Victorian *Information Privacy Act 2000* and *Health Records Act 2001*, and the federal *Privacy Act 1988* and *Copyright Act 1968* must be met.

# Assessment and reporting

## SATISFACTORY COMPLETION

The award of satisfactory completion for a unit is based on a decision that the student has demonstrated achievement of the set of outcomes specified for the unit. This decision will be based on the teacher's assessment of the student's performance on assessment tasks designated for the unit. Designated assessment tasks are provided in the details for each unit. The Victorian Curriculum and Assessment Authority publishes an assessment handbook that includes advice on the assessment tasks and performance descriptors for assessment for Units 3 and 4.

Teachers must develop courses that provide opportunities for students to demonstrate achievement of outcomes. Examples of learning activities are provided in the Advice for Teachers section.

Schools will report a result for each unit to the Victorian Curriculum and Assessment Authority as S (Satisfactory) or N (Not Satisfactory).

Completion of a unit will be reported on the Statement of Results issued by the Victorian Curriculum and Assessment Authority as S (Satisfactory) or N (Not Satisfactory). Schools may report additional information on levels of achievement.

## AUTHENTICATION

Work related to the outcomes will be accepted only if the teacher can attest that, to the best of their knowledge, all unacknowledged work is the student's own. Teachers need to refer to the current year's *VCE and VCAL Administrative Handbook* for authentication procedures.

## LEVELS OF ACHIEVEMENT

### Units 1 and 2

Procedures for the assessment of levels of achievement in Units 1 and 2 are a matter for school decision. Assessment of levels of achievement for these units will not be reported to the Victorian Curriculum and Assessment Authority. Schools may choose to report levels of achievement using grades, descriptive statements or other indicators.



### Units 3 and 4

The Victorian Curriculum and Assessment Authority will supervise the assessment of all students undertaking Units 3 and 4.

In Food and Technology the student's level of achievement will be determined by school-assessed coursework, a school-assessed task and an end-of-year examination. The Victorian Curriculum and Assessment Authority will report the student's level of performance on each assessment component as a grade from A+ to E or UG (ungraded). To receive a study score, students must achieve two or more graded assessments and receive S for both Units 3 and 4. The study score is reported on a scale of 0–50. It is a measure of how well the student performed in relation to all others who took the study. Teachers should refer to the current year's *VCE and VCAL Administrative Handbook* for details on graded assessment and calculation of the study score. Percentage contributions to the study score in Food and Technology are as follows:

- Unit 3 school-assessed coursework: 15 per cent
- Unit 4 school-assessed coursework: 15 per cent
- Units 3 and 4 school-assessed task: 40 per cent
- End-of-year examination: 30 per cent

Details of the assessment program are described in the sections on Units 3 and 4 in this study design.

# Unit 1: Properties of food

In this unit students are introduced to the diverse nature of food, how to prepare it and how to store it for the best quality in terms of safety, health and aesthetics. Students study safe and hygienic food handling practices and apply these practices in the preparation of food. Food storage practices that maximise quality of raw and cooked food are also investigated.

Students discover the links between classification of foods and their properties and how their enjoyment of food is associated with different cooking methods and properties of foods. They examine changes in properties of food when different preparation and processing techniques are used. Students apply this knowledge when preparing food.

## AREA OF STUDY 1

### Keeping food safe

This area of study provides students with an understanding of the work practices involved in ensuring that optimal quality of food is maintained to prevent food spoilage and food poisoning and therefore safe for consumption. Students examine causes of food spoilage. They also examine and apply safe and hygienic handling and correct use of tools and equipment to produce quality outcomes in food production.

### Outcome 1

On completion of this unit the student should be able to explain and apply safe and hygienic work practices when handling and storing food to maximise quality.

To achieve this outcome the student will draw on knowledge and related skills outlined in area of study 1.

### *Key knowledge*

This knowledge includes

- safe work practices in a small-scale food operation;
- causes of food spoilage;
- principles of food hygiene and safe food handling and storage;
- food storage practices to maximise quality of raw and cooked food products;
- safe use of tools and equipment.

### *Key skills*

These skills include the ability to

- implement safe and hygienic work practices;
- select, use, clean and store appropriate tools and equipment safely for food preparation;
- analyse hygiene and safety risk points in food preparation and take action to eliminate risks;
- apply understanding of storage techniques that will maximise the quality of each of the key foods.

## AREA OF STUDY 2

### **Food properties and preparation**

This area of study provides students with the opportunity to explore the physical, sensory and chemical properties of key foods. Students will develop an understanding of the relationship between categories of foods and their properties, and application of this understanding in food preparation and processing. Students also investigate the importance of the functional properties of food and the relationship between cooking techniques and the enjoyment of food. Students apply this knowledge for optimal results in food production.

### **Outcome 2**

On completion of this unit the student should be able to analyse the physical, sensory, chemical and functional properties of key foods and prepare foods to optimise these properties.

To achieve this outcome the student will draw on knowledge and related skills outlined in area of study 2.

### *Key knowledge*

This knowledge includes

- categories, nutritional composition, structure and origin of key foods, including fruits, vegetables, cereals, meats and seafood, nuts and legumes, dairy foods, eggs;
- role of fats and oils, salt, and sugar in food preparation and processing;
- sensory properties of key foods, including appearance, flavour, texture, aroma;
- changes in physical and chemical properties of food during preparation and processing;
- functional properties of key foods and their role in food preparation and processing;
- quality considerations in food selection.

### *Key skills*

These skills include the ability to

- identify the significant nutrients in each of the key foods;
- prepare foods from each of the key food groups, recognising properties of specific categories of key foods identified in the key knowledge;
- compare sensory and physical properties of selected key foods before and after food preparation and processing;
- make informed decisions about food selection;
- prepare key foods to demonstrate functional properties in food preparation and processing, including denaturation and coagulation, aeration, dextrinisation, gelatinisation.

## ASSESSMENT

The award of satisfactory completion for a unit is based on a decision that the student has demonstrated achievement of the set of outcomes specified for the unit. This decision will be based on the teacher's assessment of the student's overall performance on assessment tasks designated for the unit.

The key knowledge and skills listed for each outcome should be used as a guide to course design and the development of learning activities. The key knowledge and skills do not constitute a checklist and such an approach is not necessary or desirable for determining the achievement of outcomes. The elements of key knowledge and skills should not be assessed separately.

Assessment tasks must be a part of the regular teaching and learning program and must not unduly add to the workload associated with that program. They must be completed mainly in class and within a limited timeframe. Teachers should select a variety of assessment tasks for their assessment program to reflect the key knowledge and skills being assessed and to provide for different learning styles.

For this unit students are required to demonstrate achievement of two outcomes. As a set these outcomes encompass both areas of study.

Demonstration of achievement of Outcomes 1 and 2 must be based on the student's performance on a selection of assessment tasks. Where teachers allow students to choose between tasks they must ensure that the tasks they set are of comparable scope and demand. Assessment tasks for this unit are:

- records of production;
- designing and developing a solution in response to a design brief, including production work;
- tests (short and/or extended answer);
- practical tests;
- short written reports (for example, report or comparative analysis on a food testing activity, industry visits, or product evaluation);
- oral reports supported by visual presentations (for example, multimedia);
- production work.

## Unit 2: Planning and preparation of food

This unit provides students with the opportunity to investigate the best methods and tools and equipment to use for optimum results, and what to prepare for a range of situations. Students research, analyse and apply the most suitable food preparation and cooking methods to optimise the sensory, physical and chemical properties of food.

Students work both independently and as a member of a team to research and implement solutions to a design brief, and to respond to exciting challenges of preparing food for a range of contexts. These contexts include nutritional considerations, cultural beliefs, and resource access and availability.

### AREA OF STUDY 1

#### Food preparation processes

This area of study provides students with the opportunity to investigate various methods and tools and equipment used in food preparation and presentation for optimum results. Students examine the impact on physical and chemical properties of key foods when applying different methods of preparation and cooking. Students implement a range of skills and processes in food preparation.

#### Outcome 1

On completion of this unit the student should be able to use skills and implement processes in food preparation of key foods.

To achieve this outcome the student will draw on knowledge and related skills outlined in area of study 1.

#### *Key knowledge*

This knowledge includes

- safe, hygienic and appropriate use of tools and equipment in food preparation;
- food preparation and techniques of cooking that optimise properties of food, including nutrient content, appearance, flavour, texture and aroma;
- suitability of various methods of food preparation for different key foods;
- technological developments in tools and equipment for domestic use, such as the latest advances in cookware;
- presentation techniques to optimise sensory properties.

### *Key skills*

These skills include the ability to

- investigate food preparation and cooking methods that maximise nutrient content of food;
- research and analyse a range of cooking methods for key foods;
- apply a range of food preparation techniques that maximise properties of key foods;
- examine and compare suitable tools and equipment for preparing and/or cooking and presenting food;
- investigate technological developments in tools and equipment, and analyse their impact on food preparation.

## **AREA OF STUDY 2**

### **Planning in food preparation**

This area of study provides students with the opportunity, when planning and preparing meals, to examine the impact of social and cultural factors, to modify to suit specific nutritional needs and to investigate resource availability. Students work individually and in teams applying their knowledge and problem-solving skills to plan and prepare meals to meet requirements outlined in design briefs for a range of contexts. They evaluate the outcomes of their production activities.

### **Outcome 2**

On completion of this unit the student, individually and as a team member, should be able to plan, prepare and evaluate meals for a range of contexts.

To achieve this outcome the student will draw on knowledge and related skills outlined in area of study 2.

### *Key knowledge*

This knowledge includes

- the design process and its role in planning and evaluating meals in small-scale food operations, including home prepared meals;
- nutritional considerations when planning, including basic nutritional requirements, special nutritional requirements, such as diabetic, reduced fat, high fibre, food allergies and food sensitivities;
- modification of food preparation techniques and ingredients for specific purposes, including improving nutritional value of food;
- social and cultural factors that impact on planning, including beliefs and customs, lifestyle of consumers across the life span, purpose of the meal;
- the impact of resources on planning, including access to ingredients, skills, equipment, time, money and transport.

### *Key skills*

These skills include the ability to

- work independently and as a member of a team to plan and prepare meals to meet the requirements of specific design briefs, such as special nutritional considerations, modification to improve nutritional values of food, particular social factors where resource limitations exist, and quick and easy family meals;

- research and implement appropriate modifications or changes to food preparation techniques to improve nutritional value;
- analyse recipe modifications that can be made to suit an identified design brief;
- evaluate the outcomes of planning and production activities.

## ASSESSMENT

The award of satisfactory completion for a unit is based on a decision that the student has demonstrated achievement of the set of outcomes specified for the unit. This decision will be based on the teacher's assessment of the student's overall performance on assessment tasks designated for the unit.

The key knowledge and skills listed for each outcome should be used as a guide to course design and the development of learning activities. The key knowledge and skills do not constitute a checklist and such an approach is not necessary or desirable for determining the achievement of outcomes. The elements of key knowledge and skills should not be assessed separately.

Assessment tasks must be a part of the regular teaching and learning program and must not unduly add to the workload associated with that program. They must be completed mainly in class and within a limited timeframe. Teachers should select a variety of assessment tasks for their assessment program to reflect the key knowledge and skills being assessed and to provide for different learning styles.

For this unit students are required to demonstrate achievement of two outcomes. As a set these outcomes encompass both areas of study.

Demonstration of achievement of Outcomes 1 and 2 must be based on the student's performance on a selection of assessment tasks. Where teachers allow students to choose between tasks they must ensure that the tasks they set are of comparable scope and demand. Assessment tasks for this unit are:

- records of planning and production;
- designing and developing a solution in response to a design brief, including production work;
- tests (short and/or extended answer);
- short written reports (for example, report or comparative analysis on a food testing activity, industry visits, or product evaluation);
- oral reports supported by visual presentations (for example, multimedia);
- production work.

## Unit 3: Food preparation, processing and food controls

This unit requires students to analyse the functions of the natural components of key foods and apply this information in the preparation of foods. Students will investigate cooking techniques and justify the use of the best techniques for key foods. They develop an understanding of food processing techniques to prevent spoilage in industrial and domestic settings, and will also preserve food using some of these techniques.

Students develop an understanding of food safety in Australia by investigating the causes of food poisoning and food spoilage, and the relevant regulations. Students apply safe work practices while preparing food.

Students write a design plan developed from a design brief that they devise. In the design plan, they will apply their knowledge about key foods, properties of food, tools, equipment, cooking techniques and preservation techniques best suited to a particular context. They make decisions and choices related to their understanding of the brief. In developing this plan, students establish a timeline to complete the set of food items to meet the requirements of the brief in Unit 4.

### AREA OF STUDY 1

#### Food preparation and processing

This area of study enables students to develop an understanding of key foods and examine their natural food component functions. Students analyse how these properties may impact on food preparation and processing techniques in industry and small-scale production such as a domestic setting. Students explore and apply to key foods a range of methods of cooking, food preparation, food processing and food preservation techniques.

#### Outcome 1

On completion of this unit the student should be able to analyse food preparation of and processing techniques for key foods and prepare foods using these techniques.

To achieve this outcome the student will draw on knowledge and related skills outlined in area of study 1.



### *Key knowledge*

This knowledge includes

- the natural components of key foods, including cereals, fruits, vegetables, meats, dairy foods, eggs, nuts and legumes;
- functions of natural food components of key foods, including acids, enzymes, alkalis, proteins, starches and sugars, fats and oils and their impact in food preparation and processing;
- the primary and secondary processing of one of each type of the following foods that occurs from the source of origin to the consumer, including fruit, vegetables, dairy, and cereal;
- techniques of cooking key foods, including dry methods (roasting, baking, grilling, frying); wet methods (boiling, poaching, steaming, stewing) and microwave cooking;
- preservation techniques to prevent spoilage of food, including freezing, dehydration, use of sugars, use of acids, heat processing and canning;
- food manufacturing systems including continuous processing and batch systems.

### *Key skills*

These skills include the ability to

- use preparation techniques that utilise the natural components of key foods in the production process;
- analyse the functions of the natural components that impact on the outcome of the final product;
- select and justify the use of particular cooking techniques for key foods;
- assess the impact of processing and preparation techniques on the properties of food;
- analyse the reasons for primary and secondary processing of one of each of the following key foods: fruit, vegetables, dairy, and cereal;
- preserve key foods using a range of food preservation methods such as freezing, dehydration, use of sugars, acids, and heat processing;
- compare food manufacturing systems and justify their suitability for different food products.

## **AREA OF STUDY 2**

### **Maintaining food safety in Australia**

This area of study enables students to develop an understanding of national, state and local authorities that govern food laws and standards in ensuring and maintaining food safety in Australia. In the food industry, hygienic and safe work practices apply at all stages in the supply chain. Students investigate how these practices apply to the manufacturing stage of the food supply chain, including the labelling of manufactured products. Students examine the causes of food poisoning and the practices followed to prevent food spoilage and food poisoning.

### **Outcome 2**

On completion of this unit the student should be able to describe the role of national, state and local authorities in ensuring and maintaining a safe food supply within Australia.

To achieve this outcome the student will draw on knowledge and related skills outlined in area of study 2.

### *Key knowledge*

This knowledge includes

- food standards in Australia and the role of and the relationship between national, state and local authorities in ensuring a safe food supply, including Food Standards Australia New Zealand (FSANZ);
- causes of food spoilage and food poisoning;
- health, safety and hygiene practices and the reasons for Hazard Analysis and Critical Control Points (HACCP) in preventing food spoilage and food poisoning;
- food labelling regulations.

### *Key skills*

These skills include the ability to

- identify the various levels of controls in place in Australia to ensure that the food provided to consumers is of high quality;
- apply relevant health, safety and hygiene practices in food preparation to prevent food spoilage and food poisoning;
- identify and justify the components of a food label.

## **AREA OF STUDY 3**

### **Developing a design plan folio**

This area of study focuses on the development of a design plan to meet the requirements of a specific design brief. Students develop a design brief, investigate its requirements, consider and justify product choices and develop a design plan to be implemented in Outcome 1, Unit 4. Students explore any constraints and considerations, such as the implications of properties of ingredients, processing techniques and specific needs of the consumer/s, and incorporate the findings of their research and exploration into the design plan.

### **Outcome 3**

On completion of this unit the student should be able to develop a design plan folio that effectively satisfies the requirements of a design brief.

To achieve this outcome the student will draw on knowledge and related skills outlined in area of study 3.

### *Key knowledge*

This knowledge includes

- the initial stages in food product development including research, content of a design brief, establishing criteria for evaluation;
- components of a design plan folio including:
  - a design brief including specifications (considerations and constraints)
  - criteria for evaluation
  - a design plan including ideas, notes, research, and an outline of a set of food preparation and processing activities as a response to a design brief
  - a production plan comprising a sequence of operations for a set of five to eight food items and individual production plans or production sessions;

- ingredients, techniques, including food preservation techniques and simple to complex processes, and choices of equipment suitable for processing foods to meet the requirements of the design brief;
- properties of foods (including sensory, chemical, physical and functional) to meet specific needs of the consumer/s identified in the brief;
- safety and hygiene requirements of food and tools and equipment.

### *Key skills*

These skills include the ability to

- develop a design brief, and research and propose a set of five to eight food items suitable for an identified context or scenario;
- develop criteria for evaluation from the design brief;
- make decisions about appropriate foods to meet specific needs of the consumer/s identified in the brief;
- develop a plan that includes an outline of the proposed production of a set of food items for an identified situation, need or occasion requiring food products;
- establish a timeline to ensure the completion of the design plan in the allocated time;
- plan two food items for comparison with similar commercial products;
- gather relevant information about properties of ingredients and processes, including food preservation techniques, to assist in decision making for the choices of particular products in the design plan;
- investigate food safety and hygiene requirements and make informed judgments about the application of these within the design plan;
- record information about choices and decisions.

## **ASSESSMENT**

The award of satisfactory completion for a unit is based on a decision that the student has demonstrated achievement of the set of outcomes specified for the unit. This decision will be based on the teacher's assessment of the student's overall performance on assessment tasks designated for the unit. The Victorian Curriculum and Assessment Authority publishes an assessment handbook that includes advice on the assessment tasks and performance descriptors for assessment.

The key knowledge and skills listed for each outcome should be used as a guide to course design and the development of learning activities. The key knowledge and skills do not constitute a checklist and such an approach is not necessary or desirable for determining the achievement of outcomes. The elements of key knowledge and skills should not be assessed separately.

To demonstrate satisfactory completion of Unit 3, Outcome 3 students must present evidence of the development of a design plan folio.

### **Assessment of levels of achievement**

The student's level of achievement in Unit 3 will be determined by school-assessed coursework, a school-assessed task and an end-of-year examination.

*Contribution to final assessment*

School-assessed coursework for Unit 3 will contribute 15 per cent to the study score.

School-assessed task for Units 3 and 4 will contribute 40 per cent to the study score.

The level of achievement for Units 3 and 4 is also assessed by an end-of-year examination, which will contribute 30 per cent to the study score.

**School-assessed coursework**

Teachers will provide to the Victorian Curriculum and Assessment Authority a score representing an assessment of the student's level of achievement.

The score must be based on the teacher's rating of performance of each student on the tasks set out in the following table and in accordance with an assessment handbook published by the Victorian Curriculum and Assessment Authority. The assessment handbook also includes advice on the assessment tasks and performance descriptors for assessment.

Assessment tasks must be a part of the regular teaching and learning program and must not unduly add to the workload associated with that program. They must be completed mainly in class and within a limited timeframe. Where optional assessment tasks are used, teachers must ensure that they are comparable in scope and demand. Teachers should select a variety of assessment tasks for their program to reflect the key knowledge and skills being assessed and to provide for different learning styles.

Outcomes	Marks allocated*	Assessment tasks
<b>Outcome 1</b> Analyse food preparation of and processing techniques for key foods and prepare foods using these techniques.	30	Any one or a combination of: <ul style="list-style-type: none"> <li>• production activities</li> <li>• a report (oral, short written)</li> <li>• a multimedia presentation</li> <li>• an essay</li> <li>• a test</li> <li>• an annotated visual display</li> <li>• a production portfolio.</li> </ul>
<b>Outcome 2</b> Describe the role of national, state and local authorities in ensuring and maintaining a safe food supply within Australia.	20	Any one or a combination of: <ul style="list-style-type: none"> <li>• a report (oral, short written)</li> <li>• a multimedia presentation</li> <li>• a test (short and/or extended answer)</li> <li>• an annotated visual display</li> <li>• a case study</li> <li>• a media analysis.</li> </ul>
<b>Total marks</b>	<b>50</b>	

\*School-assessed coursework for Unit 3 contributes 15 per cent to the study score.

# Unit 4: Food product development and emerging trends

In this unit students work independently to complete the challenge of implementation of the design plan they established in Unit 3. In completing this task, students apply food safety and hygiene guidelines and evaluate the product planning and processes in the plan.

Students examine food product development, and research and analyse factors that have contributed to product development. They investigate the process of product development, including packaging, packaging systems and marketing.

Students investigate emerging trends in product development, including societal pressures to improve health, technological developments, and environmental considerations.

## AREA OF STUDY 1

### Implementing a design plan

This area of study focuses on the application of design and product development processes. Students investigate processes and skills necessary to implement their previously developed design plan. They apply their theoretical knowledge of preparation, processing and preserving of food based on the developed plan. Students implement skills of preparation, processing and preserving, and appropriately present and evaluate the product. They evaluate the effectiveness and efficiency of production activities in relation to their plan.

### Outcome 1

On completion of this unit the student should be able to implement the design plan for a set of five to eight food items, and evaluate the outcome of the product against the requirements of the design brief developed in Outcome 3 Unit 3.

To achieve this outcome the student will draw on knowledge and related skills outlined in area of study 1.

#### *Key knowledge*

This knowledge includes

- planning processes in implementing a design plan;
- food preparation, processing and preserving techniques to implement the plan;

- properties of foods (including sensory, chemical, physical, functional);
- food safety and hygiene requirements to implement the plan.

### *Key skills*

These skills include the ability to

- implement the product development process to produce a range of five to eight food items in response to the design brief;
- apply food safety and hygiene guidelines appropriate to the implementation of the plan;
- record information about choices and decisions made relevant to the production;
- use appropriate techniques, including simple through to more complex processes, to maximise the qualities of the food produced to meet the design plan;
- evaluate the outcome of the production of two of the set of food items against similar commercial products;
- evaluate product outcomes using previously developed criteria;
- evaluate the effectiveness of planning, safety and hygiene practices, and efficiency of production activities.

## **AREA OF STUDY 2**

### **Product development**

This area of study considers the types of food product development and the factors relating to these developments. Students examine the process of food product development from the design brief and planning stage to the prototype, production, packaging, labelling, marketing, and evaluation of the final product.

### **Outcome 2**

On completion of this unit the student should be able to analyse factors related to food product development and explain processes involved in the development and marketing of a food product.

To achieve this outcome the student will draw on knowledge and related skills outlined in area of study 2.

### *Key knowledge*

This knowledge includes

- factors related to the development of food products, including social and environmental pressures, changes in technology, consumer demands, industry economics;
- types of product development including Me-toos and line extensions;
- the process of food product development including evaluation of food product development;
- product analysis of new food products;
- the purposes of packaging;
- packaging systems including Aseptic packaging and Modified Atmosphere Packaging (MAP);
- product marketing, promotional strategies and advertising, including ethical considerations and health claims.

### *Key skills*

These skills include the ability to

- research and analyse the factors that have contributed to food product development;
- describe the product development process and the role of each aspect of the process in achieving a final successful food product;
- investigate the role of technology in different packaging systems;
- evaluate marketing strategies for food products and their effectiveness in providing accurate information to the consumer.

## **AREA OF STUDY 3**

### **New and emerging food trends**

This area of study explores the impact of technology on food production and the development of new and emerging foods. Students investigate the changes in food products available and innovation in product development as a result of consumer needs and expectations. Students also investigate the impact of food production on the environment; especially the disposal of packaging.

### **Outcome 3**

On completion of this unit the student should be able to analyse new and emerging developments in food production.

To achieve this outcome the student will draw on knowledge and related skills outlined in area of study 3.

### *Key knowledge*

This knowledge includes

- composition of new and emerging foods including functional foods, novel foods and foods to meet particular dietary requirements and food sensitivities;
- technological developments that have led to the development of new and emerging foods;
- environmental issues in the development of food and food products, including economic advantage of primary production versus environmental impacts, and disposal of packaging;
- innovations in food product development, including plant breeding and genetic modification.

### *Key skills*

These skills include the ability to

- research and analyse new and emerging foods that have been developed to meet market demands;
- investigate plant breeding and genetic modification and evaluate the impact of this development on one food product;
- analyse the pressures of economic gain in food production versus environmental impact.

## ASSESSMENT

The award of satisfactory completion for a unit is based on a decision that the student has demonstrated achievement of the set of outcomes specified for the unit. This decision will be based on the teacher's assessment of the student's overall performance on assessment tasks designated for the unit. The Victorian Curriculum and Assessment Authority publishes an assessment handbook that includes advice on the assessment tasks and performance descriptors for assessment.

The key knowledge and skills listed for each outcome should be used as a guide to course design and the development of learning activities. The key knowledge and skills do not constitute a checklist and such an approach is not necessary or desirable for determining the achievement of outcomes. The elements of key knowledge and skills should not be assessed separately.

### Assessment of levels of achievement

The student's level of achievement for Unit 4 will be determined by school-assessed coursework, a school-assessed task and an end-of-year examination.

#### *Contribution to final assessment*

School-assessed coursework for Unit 4 will contribute 15 per cent to the study score.

School-assessed task for Units 3 and 4 will contribute 40 per cent to the study score.

The level of achievement for Units 3 and 4 is also assessed by an end-of-year examination, which will contribute 30 per cent to the study score.

#### *School-assessed coursework*

Teachers will provide to the Victorian Curriculum and Assessment Authority a score representing an assessment of the student's level of achievement.

The score must be based on the teacher's rating of performance of each student on the tasks set out in the following table and in accordance with an assessment handbook published by the Victorian Curriculum and Assessment Authority. The assessment handbook also includes advice on the assessment tasks and performance descriptors for assessment.

Assessment tasks must be a part of the regular teaching and learning program and must not unduly add to the workload associated with that program. They must be completed mainly in class and within a limited timeframe. Where optional assessment tasks are used, teachers must ensure that they are comparable in scope and demand. Teachers should select a variety of assessment tasks for their program to reflect the key knowledge and skills being assessed and to provide for different learning styles.



Outcomes	Marks allocated*	Assessment tasks
<b>Outcome 2</b> Analyse factors related to food product development and explain processes involved in the development and marketing of a food product.	30	Any one or a combination of: <ul style="list-style-type: none"> <li>• a test (short and/or extended response)</li> <li>• a short written report</li> <li>• a case study</li> <li>• structured questions</li> <li>• a multimedia presentation</li> <li>• an oral presentation</li> <li>• a portfolio.</li> </ul>
<b>Outcome 3</b> Analyse new and emerging developments in food production.	20	Any one or a combination of: <ul style="list-style-type: none"> <li>• a test (short and/or extended response)</li> <li>• a written report</li> <li>• a multimedia report</li> <li>• a media analysis</li> <li>• a portfolio</li> <li>• an annotated visual report.</li> </ul>
<b>Total marks</b>	<b>50</b>	

\*School-assessed coursework for Unit 4 contributes 15 per cent to the study score.

### School-assessed task

Assessment for Food and Technology includes a school-assessed task worth 40 per cent of the total mark. For this component teachers will provide to the Victorian Curriculum and Assessment Authority a grade representing an assessment of the student's level of performance in achieving **Outcome 3 in Unit 3** and **Outcome 1 in Unit 4** according to published criteria. This assessment will be subject to review by a panel appointed by the Victorian Curriculum and Assessment Authority.

Outcomes	Components of the School-assessed task
<b>Unit 3</b> <b>Outcome 3</b> Develop a design plan folio that effectively satisfies the requirements of a design brief.	Subject to external review  A design brief <b>and</b> Criteria for evaluation <b>and</b> A design plan <b>and</b> A production plan.
<b>Unit 4</b> <b>Outcome 1</b> Implement the design plan for a set of five to eight food items, and evaluate the outcome of the product against the requirements of the design brief developed in Outcome 3 Unit 3.	Subject to external review  Production work accompanied by a pictorial and written record of progress and modifications <b>and</b> An evaluation report.

**End-of-year examination****Description**

All outcomes in Units 3 and 4 will be examined. All of the key knowledge and skills that underpin the outcomes in Units 3 and 4 are examinable.

Short and extended responses will be required.

The examination will be set by a panel appointed by the Victorian Curriculum and Assessment Authority.

**Conditions**

The examination will be completed under the following conditions:

- Duration: one and a half hours.
- Date: end-of-year, on a date to be published annually by the Victorian Curriculum and Assessment Authority.
- Victorian Curriculum and Assessment Authority examination rules will apply. Details of these rules are published annually in the *VCE and VCAL Administrative Handbook*.
- The examination will be marked by a panel appointed by the Victorian Curriculum and Assessment Authority.

**Contribution to final assessment**

The examination will contribute 30 per cent to the study score.

# Advice for teachers

## DEVELOPING A COURSE

A course outlines the nature and sequence of teaching and learning necessary for students to demonstrate achievement of the set of outcomes for a unit. The areas of study broadly describe the learning context and the knowledge required for the demonstration of each outcome. Outcomes are introduced by summary statements and are followed by the key knowledge and skills which relate to the outcomes.

Teachers must develop courses that include appropriate learning activities to enable students to develop the knowledge and skills identified in the outcome statements in each unit.

For Units 1 and 2, teachers must select assessment tasks from the list provided. Tasks should provide a variety and the mix of tasks should reflect the fact that different types of tasks suit different knowledge and skills and different learning styles. Tasks do not have to be lengthy to make a decision about student demonstration of achievement of an outcome.

In Units 3 and 4, assessment is more structured. For some outcomes, or aspects of an outcome, the assessment tasks are prescribed. The contribution that each outcome makes to the total score for school-assessed coursework is also stipulated.

Unit 3 Outcome 3 and Unit 4 Outcome 1 are assessed by a school-assessed task. The school-assessed task will initially be assessed by teachers using criteria published by the Victorian Curriculum and Assessment Authority and will be subject to external review.

Teachers should be very aware of the ethical values and considerations which are inherent in all aspects of the study and which underpin the major ideas on which the study is developed. The cultural sensitivities of students should also be considered in all discussions when topics are being introduced or addressed through classroom activities.

Wherever possible, teachers are encouraged to integrate practical work with theoretical knowledge in all units of the study to provide opportunities for students to enhance their understanding of key knowledge through practical application of skills.

The order in which the outcomes are addressed may vary from unit to unit. Generally, however, key knowledge and skills associated with at least two outcomes will be acquired concurrently. For example, in Unit 1, the key knowledge and skills for Outcome 1 (Keeping food safe) would be taught concurrently with Outcome 2 (Food properties and preparation). A similar approach to integrating two outcomes would be appropriate for the Unit 3 Outcome 1 (Food preparation and processing) and Outcome 2 (Maintaining food safety in Australia).

Teachers may wish to use a design brief in Unit 1 Outcome 2, however, it is important to recognise that the concept of the design brief is introduced in a more formal way in Unit 2. In Unit 1, teachers may use a practical test as one of the assessment tasks. A practical test may be based on assessing students' skills and knowledge in the production of a given recipe, assessed on a range of criteria. It is also possible to develop a practical test by requiring students to compare the outcome of the production of a product made using different ingredients or different processing methods; for example, the production of a pastry-based product using different flour types.

In Unit 2 Outcome 1, students are required to develop knowledge of technological developments in tools and equipment for domestic use such as a micro-plane grater or flexible silicon-based bakeware. Information on new tools and equipment can be found in many food magazines or through accessing the website of the manufacturing company. In addressing this outcome, it would be sufficient for students to undertake research into new technological developments rather than being required to develop skills in the use of this equipment, although it would be useful if this equipment was available as, for example, a teacher demonstration.

It is important for teachers to be aware that there should be no 'assumed knowledge' for students entering Units 3 and 4. Therefore, all teaching and learning activities should be based on developing knowledge and skills to address each of the areas of study in detail. In Unit 3 Outcome 1, the key knowledge relating to the natural components of key foods requires students to develop an understanding of the macro-nutrients which are contained in these foods. For example, macro-nutrients such as starch, protein, sugar and fat. Students should also develop knowledge of each of the techniques used in cooking key foods identified as this material may be examined.

Unit 3 Outcome 1 includes key knowledge of food manufacturing systems including continuous processing and batch systems. In addressing the components of continuous processing, it is important to recognise that this system can include both human and mechanical inputs, and that continuous processing is not exclusively reliant on automated systems.

In addressing Unit 3 Outcome 2 (Maintaining food safety in Australia) students should develop a general understanding of the role of Food Standards Australia New Zealand (FSANZ) in ensuring and maintaining a safe food supply, and the relationship of the national authority to both state and local health regulations. This outcome also requires students to develop knowledge of the food standards code in general terms only and its use by FSANZ in ensuring a safe food supply. In particular, teachers should address Standard 1.2 (Food Labelling) and Standard 3.2 (Food Safety Requirements) in sufficient detail for students to gain an understanding of the underpinning principles relating to these standards.

The focus of Unit 4 Outcome 3 (New and emerging food trends) is on current trends in the food industry, particularly those relating to functional foods and their claimed impact on health. A wide range of new and emerging foods is now available in both urban and rural areas which are easily accessible, such as bread fortified with folic acid or omega 3 fatty acids, yellow table spreads which contain plant sterols (claimed to assist in reducing cholesterol absorption) or various milk types which are enriched with additional nutrients (claimed to improve the health of consumers). A variety of resources relating to functional foods are listed in the resources section to assist teachers in developing appropriate learning activities for students. The journal *Food Australia* frequently provides information on new and emerging food trends including functional foods.

A visit to a small or large-scale food production site would be a useful experience for students, but not essential. There are many food production videos available to give students an understanding of processes, hygiene and safety issues associated with food production. The videos may be used as a substitute for plant visits.

## USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

In designing courses and developing learning activities for Food and Technology, teachers should make use of applications of information and communications technology and new learning technologies, such as computer-based learning, multimedia and the World Wide Web, where appropriate and applicable to teaching and learning activities.

Food and Technology lends itself to a wide range of information and communications technology applications including the management of data in multimedia presentations and investigations using websites for research and updating current information. Through the World Wide Web students have the opportunity to obtain information directly from food manufacturers, retailers, researchers, and regulatory authorities. Specialist software programs such as *Food Choices the IT way* are also available to assist in the nutrient analysis of food products as a part of the learning activities in Food and Technology. Teachers could also access visualisation software programs to assist students in concept mapping.

## GLOSSARY

The glossary is provided as a guide for teachers in preparing courses across Units 1 to 4. The terms have particular application in each unit according to the context selected for study. The examples are included to provide a broad and flexible understanding for the study.

Words	Definition
<b>Aeration</b>	To incorporate air into food by different food preparation techniques, for example beating air into egg white.
<b>Batch system</b>	More than a single quantity of one type of product or different types of a product are produced in convenient and varying quantities. For example, in a small bakery.
<b>Chemical properties</b>	Nutrients, enzymes.
<b>Coagulation</b>	Permanent change in protein from a liquid into a thick mass as the result of heat, addition of acids, bases or enzymes.
<b>Considerations</b>	Issues or aspects to be taken into account when planning a product, for example, personal skills. They provide some restrictions, but have some flexibility.
<b>Constraints</b>	Restrictions or problems that may affect the development of the product. For example, allergens, legislation, food safety. Factors over which the designer has little control.
<b>Continuous Process Production</b>	Highly automated system where products are manufactured from raw materials by a continuous, often 24 hours, seven days a week production system, for example, soft drinks, margarines.
<b>Dehydration</b>	Removal of water from animal or plant tissues.
<b>Denaturation</b>	Permanent structural change of the protein molecules in food. This can occur by application of heat, irradiation, mechanical action, and addition of acids or bases.
<b>Design</b>	Design is a vital step in transforming ideas into creative, practical and commercial realities. Design optimises the value of products and systems and is therefore an important key to economic and social development.
<b>Design brief</b>	A statement or outline that is developed from the initial problem or specific need. It clearly defines the aims and intentions of a new product, the specifications (considerations and constraints) required.

<b>Design plan</b>	Ideas, notes, research, and an outline of a set of food preparation and processing activities as a response to the design brief.
<b>Design process</b>	<p><sup>1</sup> The design process uses a critical, creative and iterative problem-solving approach to serving human needs. It involves the skills of analysis, synthesis and evaluation.</p> <p><sup>2</sup> Descriptions of the design process vary, but in general terms it includes the following:</p> <ul style="list-style-type: none"> <li>• define/identify the problem or requirements of the brief;</li> <li>• analyse the problem or brief;</li> <li>• generate design options;</li> <li>• select an appropriate design option;</li> <li>• produce/realise the selected design;</li> <li>• evaluate the selected option.</li> </ul>
<b>Dextrinisation</b>	Process of starch breaking down to dextrin, caused when starch granules are exposed to dry heat, acids, or enzymes.
<b>Environmental factors</b>	Factors that are created by an environmental situation or have an impact on the environment. These factors may be at the primary or secondary processing stage and packaging disposal.
<b>Evaluation</b>	Includes the sensory, physical and chemical analysis of results. In evaluating food, a sensory evaluation is essential: does it taste good? Evaluation also occurs when students compare food items or food products against evaluation criteria developed from a design brief.
<b>Food poisoning</b>	Illness caused by bacterial, chemical, or biological contamination of food.
<b>Food spoilage</b>	Reduction of food quality identified by deterioration in the physical, chemical and/or sensory properties.
<b>Functional foods</b>	<sup>3</sup> Any food or food ingredient that may provide a health benefit beyond the traditional nutrients it contains.
<b>Functional properties</b>	The impact of the physical and chemical properties of food on food preparation and processing outcomes.
<b>Gelatinisation</b>	The process that occurs where starch granules absorb water in the presence of heat and thicken the liquid, forming a gel.
<b>Genetic modification</b>	The application of genetic engineering to directly manipulate the genetic makeup of organisms.
<b>HACCP</b>	Hazard Analysis and Critical Control Points. HACCP is a food safety system that identifies potential food hazards and their control points at all stages in the production of the food.
<b>Key foods</b>	Fruits, vegetables, cereals, meats and seafood, nuts and legumes, dairy foods, eggs, fats and oils.
<b>Line-extension</b>	Extensions on existing products, a variation or an improvement. This constitutes the largest proportion of product development.
<b>Me-toos</b>	A direct copy of an existing product.
<b>New and emerging foods</b>	Foods that have been developed as a result of technology enhancing production, knowledge of food or packaging: for example, functional foods and novel foods.
<b>Novel foods</b>	A non-traditional food for which there is insufficient knowledge in the broad community to enable safe use in the form or context in which it is presented (Australian Food Standards). For example, olestra, a mixture of sucrose esters used as a fat replacement. Novel foods include novel foods used as ingredients in another food.
<b>Origins</b>	The original food source of a particular food product.
<b>Physical properties</b>	A particular trait such as size, viscosity, shape, colour.

<b>Primary processing</b>	The processing that occurs after harvesting or slaughter to make food ready for consumption or use in other food products.
<b>Secondary processing</b>	Turns primary processed food into other food products.
<b>Sensory properties</b>	Properties where the senses are used to note particular attributes; colour, mouth-feel, texture, flavour, aroma.
<b>Small-scale food operation</b>	Preparing food in small quantities, with the use of technology more likely to be associated with a domestic setting.
<b>Social factors</b>	Factors related to people's lives and the community they live in and how they live; including family, friends, media, and other social groups with shared backgrounds.
<b>Supply chain</b>	All the suppliers (or source) of different food items involved in the production of a particular food product, from an original raw ingredient to all other ingredients added to a particular food product.

<sup>1</sup> Adapted from *CREATE Australia Educating by Design*, Tina Jackson and Kate Doyle, 1996, pages 14 and 19.

<sup>2</sup> Adapted from *lab.3000 – Innovation in Digital Design* (RMIT)

<sup>3</sup> US Institute of Medicine's Food and Nutrition Board 1994, in *Food and Nutrition, Australasia, Asia and the Pacific* (2nd edition), edited by Mark Wahlgvist, Allen & Unwin, 2002, page 116.


## KEY COMPETENCIES AND EMPLOYABILITY SKILLS

Students undertaking the following types of assessment, in addition to demonstrating their understanding and mastery of the study, typically demonstrate the following key competencies and employability skills.

Assessment task	Key competencies and employability skills
<b>Records of production</b>	Planning and organising activities
<b>Records of planning and production</b>	Planning and organising activities, solving problems
<b>Designing and developing a solution in response to a design brief including production work</b>	Collecting, analysing and organising information; working with others and in teams; communicating ideas and information; using mathematical ideas and techniques; using technology, initiative and enterprise, self management
<b>Test</b>	Solving problems; planning and organisation; communication (written)
<b>Practical test</b>	Use of information and communications technology, working with others and in teams; solving problems; planning and organisation; communication (written); using mathematical ideas and techniques; using technology
<b>Written report</b>	Solving problems; planning and organisation; communication (written)
<b>Oral report supported by visual presentations</b>	Working with others and in teams; communicating ideas and information; solving problems; planning and organisation; communication (written and oral); using technology
<b>Production work</b>	Working with others and in teams; using technology; planning and organisation; communication (oral), self management, initiative and enterprise

In completing work for this study, students may demonstrate other key competencies and employability skills, such as using mathematical ideas and techniques.

## LEARNING ACTIVITIES

Examples of learning activities for each unit are provided in the following sections. Examples highlighted by a shaded box are explained in detail in accompanying boxes. The examples that make use of information and communications technology are identified by this icon .

### Unit 1: Properties of food

#### AREA OF STUDY 1: Keeping food safe

##### Outcome 1

Explain and apply safe and hygienic work practices when handling and storing food to maximise quality.

##### *Examples of learning activities*

analyse hygienic and safe work practices in food preparation and processing shows on television



working in teams, use the Internet to research a recent newspaper article which highlights an incident of food poisoning in Australia and present the key findings to the class

store a selection of fresh foods in a range of ways for a period of time and observe the results; identify causes of food spoilage for each food; record optimal methods of storage

identify storage techniques that enhance the ripening process and improve the quality of foods such as unripe bananas, green mangoes, green tomatoes

identify and discuss the advantages/disadvantages of different chopping surfaces in providing hygienic food preparation; develop recommendations for the most hygienic surface type for food preparation

complete a practical activity to evaluate the safety, effectiveness and efficiency of various cutting tools and small electric appliances



work in small teams to develop, using appropriate software, a series of posters or small instructional leaflets that identify potential hazards, and recommendations for health and safety procedures and hygienic practices for junior students using the kitchen in the Food and Technology centre

identify and explain the hygiene and safety risk points for food spoilage when transporting, storing, preparing and serving a key food; for example, meat/poultry or eggs; discuss strategies that will eliminate risks



access the website of a food manufacturer for a key food and identify recommendations for preparing and storing this food safely; assess the usefulness of this information for consumers and make recommendations for any improvements to the information provided

design a checklist for the production of a selected food product using key foods; the checklist must include the selection and safe use of appropriate tools and equipment, safe food storage and appropriate standards for cleaning; students could use a strategy or thinking skills such as 'Habits of Minds', [www.habits-of-minds.net](http://www.habits-of-minds.net) to complete the task and analyse the practices; appropriate 'Habits of Mind' include persisting; applying past knowledge to new situations; thinking flexibly; striving for accuracy; creating, imagining, innovating; taking responsible risks



**Detailed example****ANALYSE HYGIENE AND SAFETY RISK POINTS**

1. Undertake a web search for information on health and safety risks of a key food; for example, meat/poultry or milk. A good starting point for research is the website of Food Safety Victoria at [www.health.vic.gov.au/foodsafety/](http://www.health.vic.gov.au/foodsafety/). Students should focus their research on Australian websites to obtain data relevant to Australian conditions.
2. Prepare an oral report and an accompanying multimedia presentation based on the following:
  - the causes of food spoilage in the key food identified
  - hygiene and safety risk points when transporting and storing the key food
  - safe food handling when preparing and serving the food
  - storage practices to maximise the quality of the food in its raw and cooked form.
3. Discuss strategies that will overcome the hygiene and safety risks identified.


**AREA OF STUDY 2: Food properties and preparation****Outcome 2**

Analyse the physical, sensory, chemical and functional properties of key foods and prepare foods to optimise these properties.

**Examples of learning activities**

categorise a range of food into different groups on the basis of their physical, sensory, chemical and functional properties; justify the decisions made about the groupings

select a category of food and identify examples of foods which fit into this category; for each food identified, discuss the origin, structure and nutrient composition


 work in small teams to identify the main nutrients from a specific category of foods and identify the purpose of these nutrients for good health; present the information using presentation software


work in small teams to prepare a simple recipe which uses a key food as the main ingredient; set up a tasting table to complete a sensory analysis of all the products


work in small teams to prepare a simple recipe which highlights a functional property of a key food; present a short oral report or practical demonstration of the functional property to the class

prepare a list of recommendations of quality considerations for key foods suitable for use by young adults living independently

visit a local food produce market and examine and compare the quality considerations when selecting key foods

 use the Internet to research the origin, structure and nutrient composition of one key food


 research websites of major breakfast cereal manufacturers to investigate the nutrient composition of packaged breakfast cereals


 use a dietary analysis software program to compare the nutrient content of key foods

prepare a biscuit recipe, for example, melting moments or shortbread biscuits, and identify the role of each of the key ingredients used in their preparation

compare the physical, sensory and chemical properties of a range of vegetables before and after preparation and cooking

prepare one key food using different food preparation methods to alter the sensory properties of the food, for example, steaming, roasting, baking, frying and boiling of potatoes

 research websites (such as the site of a major supermarket chain) to develop ideas about the range of products that can be made from one key food

 use the Internet to research recipes which include fats and oils, salt or sugar as a significant ingredient and discuss their functional role in the recipe

prepare a range of recipes over several practical sessions that demonstrate the functional properties of key foods such as denaturation and/or coagulation, aeration, dextrinisation and gelatinisation

complete a production involving aeration; complete an evaluation for the production, identifying a particular piece of equipment used and advantages/disadvantages of the equipment for completing the task; discuss possible alternatives

prepare a product such as a lemon tart; analyse the effect of heat and moisture on the functional properties of starches and proteins, and their impact on the physical, sensory, chemical properties of the product; the analysis may include the development of an evaluative table

prepare a range of products that demonstrate the functional property of particular foods to aerate mixtures, for example egg white foam, creamed butter and sugar, yeast, use of chemical raising agents

### ***Detailed example***

#### **FUNCTIONAL PROPERTIES OF KEY FOODS – AERATION**

1. In small teams, brainstorm the physical and chemical properties of ingredients that enhance aeration, for example eggs, yeast, baking powder, creamed butter and sugar.
2. Investigate the range of equipment that could achieve a successful outcome in making a product that requires aeration.
3. Work in small teams to prepare a range of food products, for example meringues, bread rolls, Anzac biscuits, creamed patty cakes, which use different ingredients and processes to produce aeration.
4. Describe the action of the ingredient and process used to produce aeration in each product.
5. Describe the impact of aeration on the sensory properties of the finished product.
6. Present the results in a table format, including ingredients, process, environment necessary to achieve aeration using this technique, tools, impact on sensory properties.

## Unit 2: Planning and preparation of food

### AREA OF STUDY 1: Food preparation processes

#### Outcome 1

Use skills and implement processes in food preparation of key foods.


#### *Examples of learning activities*

complete a range of food preparation activities which incorporate the safe, hygienic and appropriate use of a variety of equipment


develop an information table which identifies the safe use and care of equipment suitable for cutting and chopping, weighing and measuring, mixing and processing, and aerating

annotate a recipe to highlight the major pieces of equipment used and provide an explanation for their safe and appropriate use

develop a concept map to demonstrate knowledge of the skills and processes used in preparing a product using a key food

 select a tool or piece of equipment which features a recent technological development; for example, the silicon glove, micro-plane grater, non-stick cookware, flexible silicon-based bakeware, magic-eye cookware; use information brochures or the manufacturer's website to identify the materials used and/or manufacturing processes and the advantage of this equipment in food preparation

review a food magazine and select two illustrations of food products and accompanying recipes which are appealing; identify and discuss the sensory properties of colour, texture, shape, arrangement on the plate which optimise the presentation of the dish and encourage consumers to cook these recipes

 use computer-based visualisation software such as Inspiration or MindManager to prepare a knowledge map or mind map to provide a visual summary of methods of food preparation suitable for one type of each key food, for example, vegetables – carrots – steamed, boiled, blanched, baked, microwaved, in combination with other ingredients

work in small teams to research and prepare a key food using various methods of preparation, for example, poultry; grilled kebabs, baked drumsticks, stir-fried fillets, chicken curry

**Detailed example****RESEARCH AND ANALYSE A RANGE OF COOKING METHODS FOR POULTRY**

1. In small teams, prepare a knowledge map or mind map using computer-based visualisation software such as Inspiration or MindManager, of methods of food preparation suitable for one key food, for example poultry.
2. Access the website of a major poultry manufacturer and identify and list the variety of cuts of poultry available to consumers and any special tips for cooking each type of cut.
3. From the information gained from the brainstorm activity and the web research, identify the most appropriate method of cooking each of the poultry cuts listed.
4. Use current food magazines to research recipes which use the poultry cuts and methods of cooking identified.
5. Select four of the recipes which use different preparation and cooking methods for poultry and prepare the recipes; for example, grilled chicken kebabs, baked drumsticks, stir-fried chicken fillets, chicken curry using thigh fillets.
6. Prepare an evaluation of each of the recipes produced, noting the appropriateness of the cooking method for the selected poultry cut.

**AREA OF STUDY 2: Planning in food preparation****Outcome 2**

Individually and as a team member, plan, prepare and evaluate meals for a range of contexts.


**Examples of learning activities**


use a teacher-initiated design brief which focuses on the production of reduced fat or high fibre snack foods; annotate the brief to identify the considerations and constraints for planning

select a nutrient requirement such as high fibre or reduced fat and visit a supermarket to compile a list of foods to meet this nutritional need; focus on the range of products in this category, the price of products compared with traditional products and the claimed health benefits to consumers


use a teacher-initiated design brief which focuses on a main meal; work in small teams to develop criteria suitable to evaluate the meal

select and annotate a recipe to modify the ingredients and food preparation techniques to enhance the nutrient value of the meal; prepare the modified product and evaluate the sensory properties of the finished product

 examine the website of a major fast food chain and assess the nutrition information provided to consumers

 in small teams, use computer-based visualisation software such as Inspiration or MindManager to brainstorm planning considerations that a selected fast food outlet would take into account when planning their menu

work in small teams to prepare a quick and easy meal using five major ingredients, and limited equipment and time

 use the Internet to research associations established to assist people suffering from diet-related illnesses, such as coeliac disease, heart disease or lactose intolerance; investigate the food requirements for people living with these conditions

prepare a meal that highlights a particular cultural style of food preparation

work as a member of a team to plan a food-based fund-raising event for a school in accordance with hygiene laws, for example, a pancake day

work as a member of a team to design and prepare a range of healthy drinks suitable as a healthy breakfast or 'brunch' food

### ***Detailed example***

#### **ENHANCING THE NUTRIENT VALUE OF AN EVERYDAY MEAL**

Students work in small teams to complete the following task:

1. Research a main course dish suitable for an everyday meal for a family using a variety of current food magazines. A list of appropriate current food magazines is listed in the resources section of the Advice for Teachers.
2. Select a suitable recipe for a main course meal and annotate the recipe identifying ingredients which could be modified; for example, to make the meal suitable for a family member wishing to reduce their consumption of fat in their diet  
OR  
someone wishing to increase their consumption of dietary fibre.
3. Research ingredients which could be substituted for existing ingredients in the recipe to reduce the level of fat in the recipe or increase the fibre content.
4. Establish a set of criteria to be used as the basis for evaluating the modified recipe, for example, flavour, texture, aroma, visual appeal, nutrient content of the meal and appropriateness and efficiency of food preparation and processing techniques.
5. Prepare a production plan for the meal identifying how food preparation techniques could be altered to improve the nutrient content of the meal.
6. Prepare the main course dish using the modified ingredients and food preparation and processing techniques.
7. Evaluate the meal using the previously established criteria.

## Unit 3: Food preparation, processing and food controls

### AREA OF STUDY 1: Food preparation and processing

#### Outcome 1

Analyse food preparation of and processing techniques for key foods and prepare foods using these techniques.

#### *Examples of learning activities*

work in small teams to research and prepare a summary table of the natural components present in key foods and their function in recipes; for example, cereals – starch, fibre, gluten



use computer-based visualisation software such as Inspiration or MindManager to prepare a knowledge map or mind map to provide a visual summary of the functions of natural food components, for example, protein – coagulation, denaturation, hydrolysis

prepare a cereal-based product, for example, focaccia bread, and analyse the function of the natural components of the key foods used in the recipe; describe the food processing and preparation techniques undertaken; justify the cooking technique used

research using current food magazines to identify cooking techniques used to prepare each of the key foods

work in small teams to prepare a key food using a variety of cooking techniques, for example, meat (minced) – baked meat balls, grilled koftas, fried mini hamburgers, dumpling soup



visit the website of an Australian food manufacturer of a key food, for example, the processing of milk into cheese, and develop a flow chart of the main stages in primary and secondary processing of the product

research food manufacturing such as canning of fruit and develop a flow chart of the major production stages in primary and secondary processing; identify the preservation techniques used in the processing

in small groups, brainstorm popular processed foods and the method used to preserve them and prevent deterioration

select a fruit and preserve it using a variety of food preservation techniques, for example, strawberries – frozen, dehydrated, jam making, sorbet

review a visual medium and/or case study to identify the features of continuous processing and batch food manufacturing systems; prepare a list of food examples produced using each system

**Detailed example**

## THE FUNCTIONS OF NATURAL FOOD COMPONENTS IN FOOD PRODUCTS – CEREALS


1. Select a recipe for a cereal-based product, for example, focaccia bread.
2. Use current texts or complete a web-based search to identify the natural components of cereals.
3. Analyse the function of the natural components of flour (starch and gluten), yeast, sugar, salt, oil and water in the recipe.
4. Describe and explain the main processing techniques used to prepare the focaccia, for example, setting the sponge, kneading and proving of the dough, baking the bread.
5. Prepare an individual production plan for the recipe, and identify the main health, hygiene and safety issues involved in using the ingredients and equipment required to produce the recipe.
6. Prepare the selected recipe, noting the changes to the properties of the dough during the production process.
7. Bake the focaccia bread according to the instructions in the recipe. Discuss the changes that occur to the dough during baking; for example, dextrinisation, oven spring, structure formation.


**AREA OF STUDY 2: Maintaining food safety in Australia**

## Outcome 2

**Examples of learning activities**

Describe the role of national, state and local authorities in ensuring and maintaining a safe food supply within Australia.


 access the website of the national food authority and identify the role of the national, state and local authorities; prepare a flow chart summarising the roles and responsibilities of each

 access the website of the national food authority and research the purpose of food standards and their role in ensuring a safe food supply

invite a guest speaker such as the environmental health officer of the local government authority to explain the role of local government in monitoring a safe food supply

research the likely causes of food spoilage and food poisoning and prepare a summary chart of the information

view a video on food processing and identify areas where hygienic and safe food practices would be critical in the production of a particular food

 prepare a presentation using presentation software for a small business seminar, which outlines the food safety requirements for establishing a small catering business

prepare a recipe and identify the health, safety and hygiene practices necessary to prevent food spoilage and food poisoning

invite a member of the class who is employed in the food service industry to outline the health and safety procedures they follow in their workplace; as a group, brainstorm the reasons for these procedures

use a variety of food labels on products to identify and justify the components of food labels

**Detailed example****FOOD SAFETY IN A SMALL CATERING BUSINESS**

Work in small teams to prepare a data presentation for a small business seminar which outlines the food safety requirements for establishing a small catering company.

The websites for Food Safety Victoria or Food Smart may be good starting points for research:

[www.health.vic.gov.au/foodsafety/](http://www.health.vic.gov.au/foodsafety/)

[www.foodsmart.vic.gov.au](http://www.foodsmart.vic.gov.au)

The data presentation should summarise the following information:

1. The role of the state government in overseeing a food business.
2. The key responsibilities of local authorities in establishing a new food business.
3. The requirements necessary for running a food business safely, for example:
  - preparing a food safety program
  - staff training
  - personal hygiene for food handlers
  - high-risk foods and how to store and prepare them safely
  - how to check for quality when selecting food
  - labelling of food products for sale
  - recall of food products.
4. Share the results with the class by presenting an oral report to accompany the data presentation.

**AREA OF STUDY 3: Developing a design plan folio****Outcome 3**

Develop a design plan folio that effectively satisfies the requirements of a design brief.

**Examples of learning activities**

develop a list of scenarios on which a design brief could be based for a set of food products


use a teacher-initiated design brief to identify considerations and constraints in the brief; annotate the brief to identify the essential elements and develop appropriate criteria to evaluate the final product; brainstorm a set of products which would meet the requirements of the brief

review approaches to developing a design plan folio using the work of previous students, including those entered in the Top Designs exhibition

using a teacher-initiated design brief, work in small teams to brainstorm ideas for a set of food products which would satisfy the brief; outline the key steps required in a production plan to produce the set of products

select a recipe and develop relevant notes on preparing the product, including a discussion of the functional properties of the key ingredients, complex processes used in the production of the product and any secondary processing techniques used in its production



 in small teams, select a range of recipes from current magazines; use computer-based visualisation software such as Inspiration or MindManager to brainstorm the functional ingredients, major processes used in producing the recipe and appropriate equipment used in the production of the product

develop a design brief to meet the specific needs of consumers; use a range of current magazines or recipe books to prepare a variety of menus appropriate to the brief

select and prepare a basic bread recipe and compare the physical and sensory properties of the finished product with a similar product available commercially

use thinking tools to promote higher order thinking in problem solving to address a design brief

research a recipe for a sweet or savoury preserve; visit a supermarket and identify the range of similar products available commercially which could be used for comparison; identify the properties which could be compared with a home-made product

### *Detailed example*

#### FOODS TO MEET SPECIFIC NEEDS OF CONSUMERS

Teachers could use the following example as a preliminary activity to enable students to develop ideas and skills for their future work.

Students develop a design brief relating to meeting the food needs of specific consumers such as a party for pre-school children using only fresh ingredients.

1. Develop a range of criteria for evaluation from the design brief.
2. Use a range of current magazines or recipe books to prepare a menu appropriate to the brief.
3. Justify the choices made.
4. Prepare a production plan which outlines the sequence of steps required to prepare the products.
5. Select one of the recipes for the menu and identify the functional properties of the key ingredients, complex processes used in the production of the product and major equipment required to produce the recipe.
6. Prepare the selected recipe and evaluate the product using the previously established criteria.

## Unit 4: Food product development and emerging trends

### AREA OF STUDY 1: Implementing a design plan

#### Outcome 1

Implement the design plan for a set of five to eight food items, and evaluate the outcome of the product against the requirements of the design brief developed in Outcome 3 Unit 3.

#### Examples of learning activities



work in small teams to revise and consolidate skills and knowledge of the process of product development by producing an electronic flow chart of the key stages in the development of a breakfast bar

students undertake a variety of food production activities using a range of preservation techniques such as jam making, dehydration or freezing

review approaches to recording information about choices and decisions made about production, for example, as annotations on individual production plans or through the development of photographic evidence during production work

demonstrate how the properties of two similar food products can be compared; for example, two different brands of canned tomato soup

prepare a recipe using complex processes such as a chocolate cake; evaluate the outcome of the production against a commercial product using a range of qualitative and quantitative measures

students plan for the preparation of a food item using complex processes such as making pastry for a tart or quiche; prepare a production plan for the product; prepare the product; evaluate the effectiveness of the planning, safety and hygiene practices and the efficiency of the production activity

analyse the risks associated with storage of foods for the set of food products prior to and after applying production techniques

#### Detailed example

##### PREPARING AND EVALUATING AN INDIVIDUAL PRODUCTION PLAN

Students plan for the preparation of a food item using complex processes such as making pastry to be used as the base for a savoury quiche or sweet tart.

1. Prepare a production plan for the food item which identifies and explains the ingredients required; the sequence of steps and food preparation techniques used in the production of the product; for example, rubbing-in, kneading, rolling, lining of flan tin, blind baking, filling and baking of quiche or tart; important health and safety requirements.
2. Outline the way the food item will be presented to maximise the qualities of the product.
3. Students should prepare the food item using the previously developed production plan.
4. Evaluate the effectiveness of the planning, safety and hygiene practices and the efficiency of the production activity.
5. Compare the physical and sensory properties of the food item with a similar commercial product.

## AREA OF STUDY 2: Product development

### Outcome 2

Analyse factors related to food product development and explain processes involved in the development and marketing of a food product.

### Examples of learning activities



work in small teams and select a new food product; brainstorm the reasons for the development of the product selected, including any social and environmental pressures, changes in manufacturing or packaging technology, consumer demand or industry economics; prepare a summary report and present the findings to the class as an oral report or a visual display

visit the website of an Australian food manufacturer or research the 'What's new' section of current food magazines and select one of the latest food products available to consumers; develop a list of the key features of the product which could be used as a part of the marketing campaign



access the website of a major food retailer, review a series of television advertisements or research using current food magazines; identify the types of product development used in the products advertised



view a video on the development of a food product, for example, high fibre bread or margarine; using a software program such as Inspiration, draw a flow chart of the key stages in product development

access a copy of the *Food Victoria* magazine and read one of the case studies on the development of a new food product; identify the key stages in the process of product development

use a range of rating systems to evaluate the sensory properties of two brands of similar products such as two types of icecream

assess the packaging systems used to package a particular food, for example chocolate biscuits; identify the materials used, the advantages and disadvantages of the packaging system, and identify the technique used to detect evidence of tampering

prepare a packaging 'showcase' of various types of food packaging; identify the purpose of each packaging type, for example safety, preservation, containment, transportation

research packaging systems including the features of aseptic and MAP packaging; identify the key features used in the production of each type of system that enables them to protect and preserve food

visit a supermarket and identify a range of foods packaged using aseptic and MAP packaging; select two examples of each type of packaging system and list the benefits to consumers



develop a concept map using visualisation software such as Inspiration, to identify factors used by a food manufacturer in designing and marketing of one of their food products

review a range of television and print commercials; identify the target market for each product and the strategies used to promote the product

work in small teams to select a new food product; identify the target market and suggest appropriate marketing strategies for the product; provide reasons for the strategies suggested

work in small teams to develop a promotional strategy for a primary producer promoting a key food, for example, a fruit or vegetable



visit the food standards website and research the definition of 'health claims'; in small teams, brainstorm why nutritional claims are allowed on a food label, but health claims are not

in small teams, prepare a class debate on the importance of ethical considerations in food marketing

### ***Detailed example***

#### **FACTORS THAT HAVE CONTRIBUTED TO FOOD PRODUCT DEVELOPMENT**

Work in small teams and visit the website of an Australian food manufacturer or research the 'What's new' section of current food magazines.

1. Select one of the latest food products available to consumers.
2. With other members of the group, brainstorm the reasons for the development of the product selected including any social and environmental pressures, changes in manufacturing or packaging technology, consumer demand or industry economics.
3. Develop a list of criteria to evaluate the success of the product; make a judgment about the success of the product based on the established criteria.
4. Identify the packaging system used to package the selected product; list the advantages and any disadvantages of the packaging.
5. Prepare a summary report and present the findings to the class as an oral report supported by a visual display using presentation software.

### AREA OF STUDY 3: New and emerging food trends


#### Outcome 3

Analyse new and emerging developments in food production.

#### *Examples of learning activities*

undertake a sensory analysis of examples of new and emerging foods, for example, margarine which assists in reducing cholesterol absorption or bread enhanced with omega 3 fatty acids, and compare with the traditional product


visit a local supermarket and identify new products which have emerged in the marketplace in the previous year; develop a summary chart of the research, noting the name of the new food product, the functional ingredient used in its production or the development in technology which has led to its development and the claimed nutritional or health benefit of the product

 visit the website of a food manufacturer of gluten free food (for example flour, breadmix or pasta); identify the range of new and emerging products available to meet the needs of people living with a food sensitivity


view a video on foods suitable for people with a food sensitivity; identify the reasons for the development of the product and the process of product development

prepare a short tutorial to be given to other class members on the features of a new technological development in food manufacturing; for example, reverse osmosis and ultra-filtration in the production of low fat, high calcium milk

view a current television program that focuses on an environmental issue in food production; discuss the key factors in food production which have led to the environmental concern highlighted in the program

 visit the website of the Australian Conservation Foundation, Greenpeace or CSIRO and select an example of an issue relating to primary production and evaluate its impact

obtain a copy of the local government information booklet on waste disposal or undertake an excursion to a local council recycling depot; identify the materials suitable for recycling and assess how effective the program will be in reducing packaging and waste

 work in small teams to investigate products available to consumers as a result of plant breeding and genetic modification; prepare a summary table of the findings

**Detailed example****INVESTIGATING PLANT BREEDING AND GENETIC MODIFICATION**

Work in small teams to investigate products available to consumers as a result of plant breeding and genetic modification.

1. Complete a web search using a web browser to identify relevant sites for the collection of information. Another starting point is the CSIRO website [www.csiro.au](http://www.csiro.au) which includes information on Gene Technology in Australia.
2. Review the selected sites for validity: source of information, author of article, date of publication, relevant links from the article, for example, to government departments.
3. Briefly explain the major steps involved in producing food products using genetic modification and the major steps in the production of foods using plant breeding.
4. Prepare a summary table of the main findings of the research, including:
  - a list of food products available as a result of genetic modification and plant breeding
  - the main features of the food products developed using genetic modification or plant breeding
  - the main advantages to consumers and producers of each product
  - the main disadvantages to consumers and producers of each product.
5. Draw a conclusion based on the key findings of the research. Do you feel that products available to consumers as a result of genetic modification and plant breeding will provide significant benefits or create major concerns for them? Will these products provide any long-term benefits to food producers? What, if any, are the main disadvantages of plant breeding and genetic modification to food producers?

## SCHOOL-ASSESSED COURSEWORK

In Units 3 and 4 teachers must select appropriate tasks from the assessment table provided for each unit. Advice on the assessment tasks and performance descriptors to assist teachers in designing and marking assessment tasks will be published by the Victorian Curriculum and Assessment Authority in an assessment handbook. The following is an example of a teacher's assessment program using a selection of the tasks from the Units 3 and 4 assessment tables.

Outcomes	Marks allocated	Assessment tasks
<b>Unit 3</b>		
<b>Outcome 1</b> Analyse food preparation and processing techniques for key foods and prepare foods using these techniques.	30	Production activities which require the preparation of a recipe that incorporates the use of at least three key foods. Analyse the function of the ingredients in the recipe selected and the effect of processing and preparation techniques on the properties of these foods.
<b>Outcome 2</b> Describe the role of national, state and local authorities in ensuring and maintaining a safe food supply within Australia.	20	A multimedia report on the food safety requirements for establishing a small food company, including the role of national, state and local authorities in Australia.
<b>Total marks for Unit 3</b>	<b>50</b>	
<b>Unit 4</b>		
<b>Outcome 2</b> Analyse factors related to food product development and explain processes involved in the development and marketing of a food product.	30	A short-answer test comprising a set of questions on food product development and the processes involved in the development and marketing of a food product.
<b>Outcome 3</b> Analyse new and emerging developments in food production.	20	A report on a new and emerging food including an explanation of the technological developments that have led to its production. Prepare an annotated visual report on the products available to consumers as a result of plant breeding and genetic modification.
<b>Total marks for Unit 4</b>	<b>50</b>	

## SCHOOL-ASSESSED TASK

In Units 3 and 4 teachers must provide students with the opportunities to complete the school-assessed task. The following is an example of a teacher's assessment program based on the tasks from the Units 3 and 4 assessment tables.

Outcomes	Marks allocated	Assessment tasks
<p><b>Unit 3</b></p> <p><b>Outcome 3</b></p> <p>Develop a design plan that effectively satisfies the requirements of a design brief.</p>	<p>Subject to external review</p>	<p>Investigate a situation that gives rise to the need for a set of food items. Prepare a design brief based on a theme or event which includes a range of considerations and constraints.</p> <p>Develop appropriate criteria for evaluation based on information in the design brief.</p> <p>Prepare a design plan which includes ideas of suitable food items to meet the requirements of the design brief and provides justification for suitability of the set of five to eight food items. Include information and notes to assist in food preparation and processing activities.</p> <p>Develop a production plan and sequence of operations to enable the set of food items to be produced.</p>
<p><b>Unit 4</b></p> <p><b>Outcome 1</b></p> <p>Implement the design plan for a set of five to eight food items, and evaluate the outcome of the product against the requirements of the design brief developed in Outcome 3 Unit 3.</p>	<p>Subject to external review</p>	<p>Students undertake production work to produce the set of food items described in the detailed design plan and production plan.</p> <p>A record of progress should be maintained including any modifications required to the design plan or set of food products. Evidence in the form of photographs or text material should be produced.</p> <p>An evaluation report which includes a response to the established criteria and a comprehensive review of the production activities should be prepared.</p>



## SUITABLE RESOURCES

Courses must be developed within the framework of the study design: the areas of study, outcome statements, and key knowledge and skills.

Some of the print resources listed in this section may be out of print. They have been included because they may still be available from libraries, bookshops and private collections.

At the time of publication the URLs (website addresses) cited were checked for accuracy and appropriateness of content. However, due to the transient nature of material placed on the web, their continuing accuracy cannot be verified. Teachers are strongly advised to prepare their own indexes of sites that are suitable and applicable to the courses they teach, and to check these addresses prior to allowing student access.

### GENERAL

#### Books

- Agri Food Media Pty Ltd 1995, *The Complete Reference to the Australian Food Industry*, Food Australia.
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- Hay, D 2003, *Modern Classics Book 2*, Harper Collins Publishers, Australia.
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- Hayter, R (ed) 1989, *Foodcraft 2 – The Wet Processes*, Macmillan Education Ltd, London.
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## GENERAL

### Journals and magazines

- Choice Magazine*, Australian Consumers Association (Choice), Marrickville, Australia.
- Delicious*, ABC Magazines, Australia.
- Donna Hay Magazine*, News Magazines, News Limited, Sydney, Australia.
- Food Australia*, Australian Institute of Food Science, NSW.
- Food Service*, Yaffa Publishing Group, Albert Park, Victoria.
- Taste of Victoria*, Food Victoria.
- Australian Table Magazine*, ACP Publishing Pty Ltd, Australia.
- Woolworths Australian Good Taste Magazine*, FPC Magazines, Australia.

## AUDIOVISUAL

### Videos

- EMA, *Germ Warfare*.
- All About Meat* 2001, Video Education Australasia, Bendigo, Victoria.
- At Your Service – Food Catering*, (Episode 7) 2003, Food for Thought, Food Science and Technology Series, ABC Television.
- Avoid that Hazard* 2000, Video Education Australasia, Bendigo, Victoria.
- Behind the Food Labels*, Video Education Australasia, Bendigo, Victoria.
- Bringing it to the Boil* 2004, Video Education Australasia, Bendigo, Victoria.
- Canning at Ardmona*, Video Education Australasia, Bendigo, Victoria.

*Characteristics and Properties of Food* 1996, Video Education Australasia, Bendigo, Victoria.

*Cheese a Matter of Taste*, Video Education Australasia, Bendigo, Victoria.

*Developing New Food Products* 2000, Classroom Video, Frenchs Forrest, NSW.

*Eating Green – Environmentally Friendly Food* (Episode 3) 2003, Food for Thought, Food Science and Technology Series, ABC Television.

*Environmental Issues in Food Production* 2003, Video Education Australasia, Bendigo, Victoria.

*Fats – Friends or Foes* (Episode 2) 2003, Food for Thought, Food Science and Technology Series, ABC Television.

*Flour, Bread and Baking* 1995, Classroom Video, Frenchs Forrest, NSW.

*Food Additives*, Video Education Australasia, Bendigo, Victoria.

*Food Delivery and Storage*, Videotel International Catering with Care

*Food for Thought* 2003, Food Science and Technology Series, ABC Television.

*Food Packaging* 2003, Video Education Australasia, Bendigo, Victoria.

*Food Packaging and the Environment*, Video Education Australasia, Bendigo, Victoria.

*Food Therapy* (Episode 1) 2003, Food for Thought, Food Science and Technology Series, ABC Television.

*Functional Foods: A Case Study of Modified Eggs*, Video Education Australasia, Bendigo, Victoria.

*Gluten-free Foods: F.G. Roberts Producing Foods for a Niche Market* 2000, Video Education Australasia, Bendigo, Victoria.

*Good Enough to Eat – Developing Food Products* (Episode 5) 2003, Food for Thought, Food Science and Technology Series, ABC Television.

*Great Food Innovations – New Apple Products*, Video Education Australasia, Bendigo, Victoria.

*Ice Cream: From Cow to Cone*, Video Education Australasia, Bendigo, Victoria.

*Improving Our Act: The New Food Standards Code for Australia and New Zealand*, Video Education Australasia, Bendigo, Victoria.

*Innovations in the Food Industry*, Video Education Australasia, Bendigo, Victoria.

*Innovations in the Food Industry - Part 2 Packaging*, Video Education Australasia, Bendigo, Victoria.

*Investigating Food Preservation* 2001, Video Education Australasia, Bendigo, Victoria.

*It's a Blast! Blast Chilling & Freezing in Food Production*, Video Education Australasia, Bendigo, Victoria.

*Leading the Pack: Innovations in Food Packaging*, Video Education Australasia, Bendigo, Victoria.

*Reading Food Labels* 2001, Video Education Australasia, Bendigo, Victoria.

*Redesigning Nature – Gene Technology* (Episode 10) 2003, Food for Thought, Food Science and Technology Series, ABC Television.

*Rice* 2003, Video Education Australasia, Bendigo, Victoria.

*Safe Food Handling*, Victorian Film Corporation.

*Safety in Food Handling* 2003, Video Education Australasia, Bendigo, Victoria.

*The Business of Marketing Food*, Video Education Australasia, Bendigo, Victoria.

*The Hard Sell – Marketing Food* (Episode 6) 2003, Food for Thought, Food Science and Technology Series, ABC Television.

*The Pain of Food Poisoning* 1997, Video Education Australasia, Bendigo, Victoria.

*The Quick Fix – Convenience Foods* (Episode 9) 2003, Food for Thought, Food Science and Technology Series, ABC Television.

*The Saladfresh Story*, Video Education Australasia, Bendigo, Victoria.

*Turning Up the Heat* 2004, Video Education Australasia, Bendigo, Victoria.

*Under Cover – Packaging Food* (Episode 4) 2003, Food for Thought, Food Science and Technology Series, ABC Television.

*Wild Tucker – Australia's Indigenous Food* (Episode 8) 2003, Food for Thought, Food Science and Technology Series, ABC Television.

## CD-ROMs

*FoodWorX* 2004, National Food Industry Strategy  
An interactive CD-ROM suitable for Years 10–12, takes students through various steps in developing a new food product, e.g. research, product development, manufacturing, quality, sales and marketing and management. To obtain a copy, email the National Food Industry Strategy at [nfis@nfis.com.au](mailto:nfis@nfis.com.au)

## GENERAL

### Websites

Australian Broadcasting Corporation, a collection transcripts from the ABC television series, Landline  
[www.abc.net.au/landline/archives.htm](http://www.abc.net.au/landline/archives.htm)

Australian Broadcasting Corporation, Schools TV, Food for Thought Series Episode 2 – Functional Foods  
[www.abc.net.au/schoolstv/food/ep2.htm](http://www.abc.net.au/schoolstv/food/ep2.htm)

Australian Canned Food  
[www.cannedfood.com.au](http://www.cannedfood.com.au)  
Provides information on the canned food industry, how food is canned, nutrition and recipes.

Australian Food and Grocery Council  
[www.afgc.org.au](http://www.afgc.org.au)  
Provides a wide range of information on consumer issues including functional foods and GM foods.

Australian Wheat Board, AWB Limited

[www.awb.com.au](http://www.awb.com.au)

Provides a wide range of material on cereals and cereal products including grain production, bread making and a variety of flour based foods.

Better Health Channel

[www.betterhealth.vic.gov.au](http://www.betterhealth.vic.gov.au)

Sponsored by the Victorian Government; provides information on current health issues, tips on healthy eating and healthy recipes.

British Nutrition Foundation

[www.nutrition.org.uk/conferences/keyfacts/functionalfoods.htm](http://www.nutrition.org.uk/conferences/keyfacts/functionalfoods.htm)

Nutrition information site including information on functional foods.

CSIRO, Australia: Scientific and Industrial Research Organisation

[www.csiro.au](http://www.csiro.au)

Provides information on many areas of primary industry including meat, dairy and aquaculture and fact sheets on handling food in the home.

Culinary Net

[www.culinary.net](http://www.culinary.net)

Includes a wide range of recipes and information on nutrition and health and safety

Dairy Australia

[www.dairyaustralia.com.au](http://www.dairyaustralia.com.au)

Dairy Australia is an industry-based organisation which provides information on the production of a range of dairy products including milk, cheese, yoghurt and ice cream.

Department of Health and Aging

[www.health.gov.au](http://www.health.gov.au)

This Commonwealth Government site provides publications on environmental healthy and physical activity and nutrition including the Australian Guide to Healthy Eating.

Department of Primary Industries – Victoria

[www.dpi.vic.gov.au/dpi/index.htm](http://www.dpi.vic.gov.au/dpi/index.htm)

Contains a wide range of information on primary industry in Victoria and on functional foods.

Dietitians Association of Australia

[www.daa.asn.au](http://www.daa.asn.au)

This site includes information on smart eating tips, healthy recipes and a healthy eating self assessment program.

Epicurious

[www.eat.epicurious.com](http://www.eat.epicurious.com)

An American site which contains a wide range of recipes.

Food Future

[www.foodfuture.org.uk](http://www.foodfuture.org.uk)

Provides a wide range of information on genetic modification in food and farming.

Foodlink

[www.foodlink.org.uk](http://www.foodlink.org.uk)

A food safety site from the United Kingdom which provides a complete guide to food safety.

Food Safety Centre of Excellence

[www.foodsafetycentre.com.au](http://www.foodsafetycentre.com.au)

This is a website for mainly for the food industry which provides fact sheets and information on food safety.

Food Safety Victoria

[www.health.vic.gov.au/foodsafety/](http://www.health.vic.gov.au/foodsafety/)

This is a Victorian Government site which provides information on keeping food safe, food poisoning and starting a food business.

Food Science Australia

[www.foodscience.afisc.csiro.au](http://www.foodscience.afisc.csiro.au)

This is a joint venture of the CSIRO and the Victorian Government and provides fact sheets and consumer information on food safety.

Food Standards Australia New Zealand

[www.foodstandards.gov.au](http://www.foodstandards.gov.au)

Provides detailed information on the Food Standards Code and a wide range of consumer information including food irradiation, GM foods, novel foods, food labelling and food allergies.

Food Victoria

[www.food.vic.gov.au](http://www.food.vic.gov.au)

Provides information on food suppliers, market information and the Victorian food industry.

Foodwatch, Saxelby, C.

[www.foodwatch.com.au](http://www.foodwatch.com.au)

Current nutritional issues, functional foods, food labelling, food facts and fallacies.

Global TechnoScan

[www.globaltechnoscan.com/Archives/fd\\_sc.htm](http://www.globaltechnoscan.com/Archives/fd_sc.htm)

General website with information on food sciences including functional foods, GM foods.

Goodman Fielder Limited

[www.uncletobys.com.au](http://www.uncletobys.com.au)

Provides a range of information on food and nutrition, food labelling and recipes.

Home Food Safety

[www.homefoodsafety.org/index.jsp](http://www.homefoodsafety.org/index.jsp)

This is a USA site with information on home food safety, lunchbox safety and safety in the kitchen.

Indigenous foods

[www.cherikoff.net](http://www.cherikoff.net)

This website provides information on Australian native ingredients and recipes for using Australian ingredients.

Inghams Chicken Enterprises

[www.ingham.com.au](http://www.ingham.com.au)

Provides information on poultry products and recipes.

International Food Information Council

[www.healthfinder.gov](http://www.healthfinder.gov)

Food safety and nutrition information.

Kraft Foods, Kraft Interactive Kitchen

[www.kraftfoods.com](http://www.kraftfoods.com)

Provides a wide range of information on recipes, nutrition information and healthy eating tips.

Logical

[www.logical.com.au/](http://www.logical.com.au/)

Provides product information and scientific and technical information on plant sterols and recipes.

Lynx Education

[www.lynx-linnet.com/lynx/html/links2/foodlinks.htm](http://www.lynx-linnet.com/lynx/html/links2/foodlinks.htm)

A UK site which provides a wide range of web links to various food sites.

**Meat and Livestock Australia**

[www.mla.com.au](http://www.mla.com.au)

An industry site which provides student information on meat production in Australia.

**Nutrition Australia**

[www.nutritionaustralia.org](http://www.nutritionaustralia.org)

Provides a wide range of information on nutrition for all age groups, food facts, nutrition news and dietary guidelines.

**National Centre of Excellence in Functional Foods**

[www.nceff.com.au](http://www.nceff.com.au)

A research centre which provides a definition of functional foods.

**National Food Industry Strategy**

[www.nfis.com.au](http://www.nfis.com.au)

A commonwealth government website which provides information on obtaining FoodworX and industry information through the journal Foodbiz.

**National Foods**

[www.natfoods.com.au](http://www.natfoods.com.au)

Includes information on dairy products and nutrition.

**New Nutrition Business**

[www.new-nutrition.com](http://www.new-nutrition.com)

This website includes information on a range of current nutrition issues including functional foods.

**McCormick Foods Australia**

[www.mccormick.com.au](http://www.mccormick.com.au)

Provides information on herbs and spices including recipes.

**OzFoodNet**

[www.ozfoodnet.org.au](http://www.ozfoodnet.org.au)

The collaborative network of OzFoodNet is a Commonwealth Department of Health and Aging resource website to identify the incidence and causes of foodborne disease and provide surveillance data across Australia.

**Packaging Council**

[www.packcoun.com.au](http://www.packcoun.com.au)

Provides information on a range of issues in the packaging industry and links to related sites.

**Red Meat Feel Good**

[www.redmeat-feelgood.com.au](http://www.redmeat-feelgood.com.au)

A website supported by Meat and Livestock Australia which provides nutrition information about meat including recipes using meat.

**Safe Food Australia**

[www.safefood.net.au](http://www.safefood.net.au)

Provides food safety information, facts sheets and industry information.

**Sanitarium**

[www.sanitarium.com.au](http://www.sanitarium.com.au)

Provides nutrition information and nutrition facts including vegetarian diets and reading labels.

**Saveur**

[www.saveur.com](http://www.saveur.com)

Provides information on culinary history, explanations, culinary traditions.

**Screaming Seeds**

[www.screamingseeds.com.au](http://www.screamingseeds.com.au)

Fine foods, spices, spice blends, cooking and herbs Australia.

**State Government of Victoria, Food Victoria**

[www.food.vic.gov.au](http://www.food.vic.gov.au)

A Victorian Government site. Deals with business and industry.

**Sydney Markets, Fruit and Vegetables for Me**

[www.fandvforme.com.au](http://www.fandvforme.com.au)

NSW Fresh Fruit and Vegetables Industry site designed for children, which has fact sheets on various fruit and vegetables.

**Tip Top Bakeries**

[www.tiptop.com.au](http://www.tiptop.com.au)

Includes information on a variety of bread products and nutrition information.

**University of Wollongong – Smart Food Centre**

[www.uow.edu.au/research/centres/smartfoods/](http://www.uow.edu.au/research/centres/smartfoods/)

Provides research papers on functional foods.

**Unilever**

[www.unilever.com/brands/healthnutrition/proactiv.asp](http://www.unilever.com/brands/healthnutrition/proactiv.asp)

Provides information on food products including the use of plant sterols in the diet.

**Woolworths, The Fresh Food People: Woolworths**

[www.woolworths.com.au](http://www.woolworths.com.au)

Rosemary Stanton provides cooking advice, information on food additives and meal planning.

**Yakult Australia**

[www.yakult.com.au/heal/functionalfoods.htm](http://www.yakult.com.au/heal/functionalfoods.htm)

Provides a wide range of information on health and nutrition and functional foods.

**YumYum.Com**

[www.yumyum.com](http://www.yumyum.com)

Recipes and information regarding kitchen safety and facts and links to particular food information, e.g. pasta.

**ORGANISATIONS****Museum Victoria**

Carlton Gardens

Nicholson Street

Carlton Victoria

Tel: 13 1102

Website: [www.museum.vic.gov.au](http://www.museum.vic.gov.au)

**Home Economics Institute of Australia**

PO Box 779

Jamison Centre

Macquarie ACT 2614

Tel: 1800 446 841

Website: [www.heia.com.au](http://www.heia.com.au)

**Nutrition Australia (Vic)**

260 Kooyong Road

Caulfield Victoria

Tel: 9528 2453

Website: [www.nutritionaustralia.org](http://www.nutritionaustralia.org)

**Victorian Home Economics and Textiles Teachers' Association**

3 Windsor Avenue

Mount Waverley

Tel: (03) 9888 2240

Website: [www.vhetta.com.au](http://www.vhetta.com.au)

VHETTA provides a range of services to members and non-members including resources and professional development activities to assist teachers of Food and Technology.