# Rossmoyne SHS - course outline 2017

# Food Science and Technology – ATAR Year 11

## Unit 1 — Food science

| **Week** | **Key teaching points** |
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| 1–2 | **Food commodities*** primary and secondary processes used to convert raw commodities into safe, quality food products
* effect of seasonal conditions on the quality, supply and price of food commodities
* objectives of the *Food Act 2008* (WA)
* purpose of the *Occupational Safety and Health Act 1984*
 |
| 3–4 | **Nutrients*** food sources and role of macronutrients and water in the body
* protein – complete and incomplete
* carbohydrates – starches, sugars, and fibre or cellulose
* lipids – saturated fats and oils, and unsaturated fats and oils
* food sources and role of micronutrients in the body
* fat-soluble vitamins – A and D
* water-soluble vitamins – B1 (thiamine), B2 (riboflavin), B3 (niacin) and C
* minerals – calcium, iron and sodium

**Task 1: Test – Food commodities and nutrients** |
| 5–7 | **Properties and performance of food*** influence of sensory properties on the selection, use and consumption of raw and processed food
* appearance
* texture
* aroma
* flavour
* sound
* influence of physical properties on the selection, use and consumption of raw and processed food
* size
* shape
* colour
* volume
* viscosity
* elasticity
* functional properties that determine the performance of food
* dextrinisation
* caramelisation
* crystallisation
* emulsification
* gelatinisation
* oxidation
* denaturation
* coagulation
* leavening
* aeration
* rancidity
 |
| 8–10 | **Processing techniques*** investigate wet processing techniques and dry processing techniques
* suitable food commodities
* effect on nutrition
* heat transfer
* sensory properties
* cost
* the technology process to produce a food product that demonstrates a wet processing technique and a dry processing technique based on a product proposal
* investigate
* devise
* produce
* evaluate
* evaluate the food product
* product’s compliance with the proposal
* product’s sensory properties
* selection of processing techniques
* selection of equipment and resources
* time requirements

**Task 2: Processing techniques** |
| 11–12 | **Nutrition and health*** societal influences on food choices
* lifestyle
* culture and traditions
* peer group
* effects of under-consumption of nutrients on health
* anaemia
* osteoporosis
* malnutrition
* constipation
* effects of over-consumption of nutrients on health
* obesity
* cardiovascular disease
* Type 2 diabetes
* devise food products
* interpret and adapt recipes
* devise food orders
* develop and trial recipes
* devise production plans
* apply preparation and processing techniques
* cost recipes

**Task 3: Nutrition and health** |
| 13–14 | **Influences on food choices*** reasons for the development and use of varieties of food commodities
* alter sensory and physical properties
* alter nutritional content
* improve yield
* new technologies in food processing
* line extensions
* profit
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|  | * economic influences on food choices
* competition in the marketplace
* product availability
* consumer resources
* societal influences on food choices
* media
* advertising
* marketing
* use of celebrities, media practices (including music, body image, colour, fonts and graphics) and food styling techniques to market food products
 |
| 15 | **Labelling of food*** role of Food Standards Australia New Zealand (FSANZ)
* Australia New Zealand Food Standards Code for food labelling requirements
* nutrition information panel
* percentage labelling
* name or description of the food
* food recall information
* information for allergy sufferers
* date marking
* ingredients list
* country of origin
* barcode
* weights and measures
* use and storage information
* mandatory warnings and information
* genetically modified content
* legibility
* categories of food exempt from food labelling laws
 |
| 16 | **Task 4: Semester 1 examination** |

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## Unit 2 — The undercover story

| **Week** | **Key teaching points** |
| --- | --- |
| 1–2 | **Adding value to food commodities*** the food supply chain
* production
* processing
* packaging
* storage
* distribution of food commodities
* the concept of value-adding to food
* changes to nutritional content
* additional processing of food
* presentation and service
* packaging
* define and classify functional foods
* natural functional foods
* processed functional foods – modified, fortified
* modification and fortification of foods by altering nutrient content
* Australia New Zealand Food Standards Code labelling requirement for health claims and for mandatory fortification of food

**Task 5: Adding value to food commodities** |
| 3–4 | **Dietary planning*** dietary planning
* *Healthy Eating Pyramid (Nutrition Australia May 2015)*
* *Australian Guide to Healthy Eating*
* *Australian Dietary Guidelines*
* nutritional needs of demographic groups, such as adolescents and adults
* influences on the nutritional wellbeing of individuals
* lifestyle
* cultural traditions
* beliefs and values
* economic circumstances
* location
* media
 |
| 5–6 | **Food processing** * food processing techniques used to control the performance of food
* application of heat
* application of cold
* exposure to air
* addition of acid
* addition of alkali
* manipulation
 |
| 7 | **Food spoilage and contamination*** causes of food spoilage and contamination
* environmental factors, such as oxygen, light, heat, water, infestation
* enzymatic activity on food
* microbial contamination of food, such as mould, yeast, bacteria
 |
| 8–9 | **Food preservation*** reasons for preserving food
* extend shelf life
* preserve nutritional value
* out of season availability
* palatability
* convenience
* economics
* reduce waste
* principles of food preservation
* control of temperature, such as pasteurisation, ultra-high temperature treatment, freezing, and canning or bottling
* anaerobic breakdown of organic substances or nutrients, such as fermentation
* addition of chemicals, such as salt, sugar, acid and artificial preservative
* removal of moisture through dehydration and evaporation
* removal of oxygen through vacuum packing

**Task 6: Test – Food spoilage and contamination, and food preservation** |
| 10–11 | **Gift basket*** the technology process to produce a preserved food product based on a product proposal
* investigate
* devise
* produce
* evaluate
* analysis of the preserved food product
* product’s compliance with the proposal
* product’s use in another food product
* product’s sensory properties
* selection of processing techniques
* selection of equipment and resources
* time requirements

**Task 6: Gift basket** |
| 12–13 | **Who chooses the food?*** influence of lifestyle choices, market demands and the impact of new technologies in developing innovative food products
* factors that influence food choices
* location
* income
* supply and demand
* environmental issues
* advertising and marketing
* ethical issues, such as animal welfare, fair trade, resource use, country of origin
* sponsorship, tokens and free gifts, and supersizing techniques used to market food products

**Task 8: Who chooses the food?** |
| 14–15 | **Celebration meal*** devise food products
* interpret and adapt recipes
* devise food orders
* develop, produce and evaluate prototypes
* devise production plans
* apply preparation and processing techniques
* cost recipes
* principles of the HACCP system
* conduct a hazard analysis
* identify critical control points
* establish critical limits for each critical control point
* establish critical control point monitoring requirements
* establish corrective actions
* verify procedures
* establish record keeping procedures
* regulation of food safety in Australia
* national authorities
* state authorities
* local authorities
* *Occupational Safety and Health Act 1984* and rights and responsibilities of employers and employees in food environments
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| 16 | **Task 9: Semester 2 examination** |