

Technology Course – Level 7 (NCEA Level 2)

Course: Food Technology

Course Duration: 1 year (9 x 50 minute periods per fortnight). The course will consist of one major unit.

A Matter of Convenience

Unit Duration: 32 weeks

Unit Description:

This unit of work provides students with an opportunity to undertake technological practice by developing a conceptual design for an innovative new food product to address an identified issue that relates to the context of convenience food. Students will also have the opportunity to participate in the *2012 NZIFST/CREST Student Product Development Challenge* which may require additional tasks and specific deadlines to be met for judging requirements.

Context:

Companies are constantly looking for the next big idea in food product development. Ideas come from many places but are always driven by a need or opportunity. Current drivers of new product development are: global foods, health and wellness, lifestyle, indulgence and organics. Consumers need for convenience has continued to drive the recent development of ready meals, meal kits, meal components and other food products.

Achievement Objectives:

- **Brief Development** - students will justify the nature of an intended outcome in relation to the issue to be resolved and justify specifications in terms of key stakeholder feedback and wider community considerations.
- **Planning for Practice** – students will critically analyse their own and others' past and current planning and management practices in order to develop and employ project management practices that will ensure the effective development of an outcome to completion.
- **Outcome Development and Evaluation**
 - **Conceptual design** - students will critically analyse their own and others' outcomes and evaluative practices to inform the development of ideas for feasible outcomes. Undertake a critical evaluation that is informed by ongoing experimentation and functional modelling, stakeholder feedback, and trialling in the physical and social environments. Use the information gained to select, justify, and develop an outcome. Evaluate this outcome's fitness for purpose against the brief. Justify the evaluation using feedback from stakeholders and demonstrating a critical understanding of the issue.

(Although students will be working as part of a group they will need to provide individual evidence for assessment, it is expected they will liaise as a group and their NZIFST/CREST ambassador to share ideas and make collaborative decisions at critical review points).

- **Prototype** – in a group students will continue to undertake ongoing experimentation and functional modelling, taking account of stakeholder feedback. They will use the information gained to select, justify, and develop a prototype to be tested in its intended physical and social and environments, evaluate the prototype's fitness for purpose against the brief and justify the evaluation using feedback from stakeholders. The prototype will be presented to the *2012 NZIFST/CREST Student Product Development Challenge* judging team along with the project poster and final report.

(Students will be share tasks amongst their group to complete this part of the project, they will not be assessed against AS91356).

- **Technological Products** – students will understand the concepts and processes employed in materials evaluation and the implications of these for design, development, maintenance, and disposal of technological products.

Learning Outcomes:

Students will:

- explore the context of convenience foods to select an issue within the specific area their NZIFST/CREST ambassador works within
- identify a need or opportunity relevant to their selected issue
- establish a conceptual statement and specifications for an outcome
- justify the specifications in terms of stakeholder feedback, and the nature of the outcome required to address the need or opportunity, consideration of the environment in which the outcome will be situated, and resources available
- critically analyse existing planning tools and project management practices to select and use planning tools to manage their own project
- generate and evaluate design ideas that are informed by ongoing research and critical analysis of existing outcomes
- critically analyse the practices of others to inform their own practice and undertake functional modelling as they develop an outcome
- evaluate the suitability of materials to select appropriate ones to be used in the production of their own outcome
- use stakeholder feedback and an understanding of the physical and social requirements to evaluate their outcomes potential fitness for purpose
- demonstrate understanding of the role of material evaluation in product development.

Course Overview:

Exploring the Context

- Explore the context of convenience foods and the sub context provided by the NZIFST/CREST ambassador. This may include:
 - analysing the role of convenience food in New Product Development
 - meeting with the ambassador to discuss the requirements of the *NZIFST/CREST Student Product Development Challenge*
 - analysing existing technologists and their practice
 - investigating existing market products and production processes

The following case studies on Techlink may be useful:

<http://www.techlink.org.nz/Case-studies/Technological-practice/food-and-biological/index.htm>

- New Product Development at Heinz Wattie's
- Developing a new stir-fry sauce
- A Bit on the Side
- Memphis Meltdown

Selecting Suitable Planning Tools

- Analyse a range of existing planning tools. These may include those students have used in past practice or by others such as teachers, managers, industry mentors, and practicing technologists.
- Students will choose the planning tools that they think will be the most helpful for them to:
 - set and review achievable goals (e.g. long term, short term, individually, group, etc)

- determine and manage critical review points (e.g. go/no go points, reflection points, milestone updates, etc)
- establish and manage resources to develop your food product (e.g. calendars, time planners, production plans, food order sheets, etc)
- Explain how these particular planning tools will help them manage the development of their project and intended outcome

Identifying an Issue

- Brainstorm possible issues
- Evaluate the issues and choose one that allows a need or opportunity to be determined
- Establish the constraints, main considerations and key stakeholders that will define the project
- Use your selected planning tools to:
 - set achievable goals
 - establish required resources (for example, time, materials, tools and equipment, research information, and community- and school-based specialist knowledge and skills)
 - determine critical review points (i.e., those that ensure the outcome will be completed)
- Write a conceptual statement of intent - what they plan to do and why, who it will be for and where it is likely to be situated

It is likely you will need to submit your project plan to CREST for approval around this stage.

Initial Idea Generation

- Generate and evaluate a number of design ideas that may be suitable exploring, researching, and critically analysing existing food products within the context
- Discuss these with the group and CREST ambassador
- Select those most appropriate for further consideration and development

Developing the Brief

- Research the social and physical environment where the potential product is likely to be used and the resources that may be needed for its development. This could include:
 - **Consumer research:** e.g. conducting a survey/interview to find out what the target market group would want from such a product
 - **Market research:** e.g. investigating what similar products may already be available, how they are priced and positioned, what ingredients they contain and what processing methods have been used
 - **Technical research:** e.g. may include a site visit to the ambassador's company premises to gain an understanding of how a similar product is manufactured, trialling different materials and techniques to test initial ideas (e.g. suitability of chosen ingredients, flavours, processes used, reliability, suitability for target market and/or key stakeholder/s, health and safety and other legal requirements)
- Analyse and annotate research in relation to the selected issue to establish the essential and desirable attributes in the potential product
- Discuss findings with the group, CREST ambassador and key stakeholders
- Refine the conceptual statement and identify initial specifications for the outcome

Review your progress

- Review progress to:
 - revise and/or confirm goals, the resources and planning tools used
 - optimise use of time and materials

It is likely you will need to complete your progress check for CREST around this stage.

Developing the Conceptual Design

- Use the information gathered to use 2D and 3D modelling to communicate design ideas:
 - annotate sketches or photograph models to show both physical and functional design features of the potential product ideas
- Test, refine and further develop design ideas by:
 - continuing to undertake research and functional modelling
 - gathering and using feedback from the group, ambassador and key stakeholders to evaluate and refine conceptual designs

Finalising the Brief and Conceptual Design

Presentation of:

- write a final brief comprising of a conceptual statement and specifications for the intended outcome
- communicate the final conceptual design to show design features which could include such things as: shape, size, colour, flavour, ingredients, packaging and labeling, instructions for use
- produce your final conceptual design and present it to group, ambassador and key stakeholders
- evaluate and justify the potential fitness for purpose of your conceptual design's outcome, as defined by your brief

Technological Products

- Before completing the final prototype it is important that students understand:
 - the relationship between performance properties of materials and performance specifications of a product (e.g. ingredients used and shelf life of the product)
 - how material evaluation procedures are undertaken to assess suitability for a product e.g. sensory, nutritional analysis, physical testing such as colour, size, texture)
 - data will be subjective (e.g. sensory) and objective techniques (e.g. nutritional value)
 - the knowledge and techniques gained supports materials selection to develop a product (this could include both ingredients and packaging)
 - material evaluation and selection might have social, cultural or environmental affects which could make a difference if particular materials are chosen or not

Developing the Prototype

Students will not be assessed against AS91356 as they will share tasks amongst their group to complete this part of the project for the NZIFST/CREST Student Product Development Challenge.

For example:

- ***Technical development of product and final CREST report – 2 students***
- ***Packaging and CREST poster – 2 students***

Assessment

- **AS91354 (2.1)**
 - **AS91355 (2.2)**
 - **AS91356 (2.3)**
- } Suggested format: portfolio, completed conceptual design and evidence of practice undertaken.
- **AS 91359 (2.6):** written report

Links to Assessment Resources:

Refer to <http://www.tki.org.nz/e/community/ncea/tech-lvl2.php> for published assessment resources 2.1, 2.2 and 2.3.

Refer to <http://www.nzqa.govt.nz/qualifications-standards/qualifications/ncea/subjects/technology/sample-external-assessments/level-2/> for sample assessment guides for 2.6

Links to Other Resources:

<http://www.techlink.org.nz/Case-studies/Technological-practice/food-and-biological/index.htm>

<http://www.royalsociety.org.nz/programmes/awards/crest/>

<http://www.royalsociety.org.nz/teaching-learning/crest/silver/recipients/2011-awards/2011-nzifstcrest-student-product-development-challenge-2/>

<http://www.nzifst.org.nz/>