DIOCESAN SCHOOL FOR GIRLS

TECHNOLOGY (FOOD)

Year 11   2012

All Technology (food) courses are developed around the three learning strands of the New Zealand Technology Curriculum: Technological Knowledge and Understanding, Technological Practice; and Nature of Technology.
Prerequisites: Students need to have an interest in food and nutrition. A satisfactory attitude and level of progress in a Year 10 Technology option is needed.

Course description:
This course provides you (the student) with an opportunity to work with a client when developing a prototype preserve that meets an identified need. You will learn: how to create their own recipes; how to develop a production sequence through testing and trialling; develop confidence and competence with practical equipment; and investigate and apply practical techniques and processes to produce a preserve.

The course also offers you an opportunity to develop and manufacture a food product suitable for fundraising, for a specific client.

This Year 11 Food Technology programme in 2012 will include study of two major units of work. You will **not** sit an exam at the end of the year; the evidence from these units will be assessed against a number of Achievement Standards, both internally and externally. You are likely to gain **18 credits** in total but have the option to gain more if you choose to.

Preserves:
- Term 1-2

Fundraising @ Dio:
- Term 2-3-4

Outline of Course	Course Duration:
Students will: • Develop and present a technological solution that meets the requirements of the brief • Demonstrate use and knowledge of technological knowledge and • Be able to describe the interactions between technological innovation and society.	• Food Technology is a whole year practical based course. • Each Food Technology class has up to 6 lessons x 50/55 minutes per 7 day timetable.

Achievement/Learning Objectives:
Links to Achievement and Learning Objectives in technology at Level 6

TECHNOLOGICAL PRACTICE
Planning for practice
Students will:
Critically analyse their own and others' past and current planning practices in order to make informed selection and effective use of planning tools. Use these to support and justify ongoing planning that will see the development of an outcome through to completion.

Brief development
Students will:
Justify the nature of an intended outcome in relation to the need or opportunity and justify specifications in terms of key stakeholder feedback and wider community considerations.

Outcome development and evaluation

Students will:

Critically analyse their own and others' outcomes to inform the development of ideas for feasible outcomes. Undertake ongoing experimentation and functional modelling, taking account of stakeholder feedback and trialling in the physical and social environments. Use the information gained to select, justify, and develop a final outcome. Evaluate this outcome's fitness for purpose against the brief and justify the evaluation, using feedback from stakeholders.

TECHNOLOGICAL KNOWLEDGE

Technological modelling

Students will:

Understand the role and nature of evidence and reasoning when managing risk through technological modelling.

Technological products

Students will:

Understand how materials are formed, manipulated, and transformed in different ways, depending on their properties, and understand the role of material evaluation in determining suitability for use in product development.

Technological systems

Students will:

Understand the implications of subsystems for the design, development, and maintenance of technological systems.

NATURE OF TECHNOLOGY

Characteristics of technology

Students will:

Understand the interdisciplinary nature of technology and the implications of this for maximising possibilities through collaborative practice.

Characteristics of technological outcomes

Students will:

Understand that some technological outcomes can be perceived as both product and system. Understand how these outcomes impact on other outcomes and practices and on people's views of themselves and possible futures.

Topic One:	Topic Two:
"Preserves"	**"Fundraising @ Dio"**
Students will develop and produce a preserve for a specific client's needs.	Students will develop and produce a food product suitable for fundraising, for a specific client.
Students will have the opportunity to work with a client to develop a prototype preserve outcome that meets the client needs. They will learn how to create their own recipes, how to develop a production sequence, through testing and trialling develop confidence and competence with practical equipment, and investigate and apply practical techniques and processes related to producing a preserve. They will develop understandings about the importance of ongoing client and stakeholder consultation, and the importance of analysing and selecting appropriate materials, techniques, and processes for preserve development and production. Several assessment standards are imbedded into this unit of work. Assessments are spaced out over the topic and will occur at appropriate times.	This assessment requires students to look at existing fundraising products. Students will revise skills in interpreting information, modify an existing product or create their own in the development of an original product design to meet the client's specifications. Testing, trialling and following production sequences are a focus of this unit. Several assessment standards are imbedded into this unit of work. Assessments are spaced out over the topic and will occur at appropriate times. The technological modelling undertaken to support decision making work from this unit is submitted for external assessment

Assessment Standards	Assessment Standards
91045 (1.2) Internal Credits: 4 Use planning tools to guide the technological development of an outcome to address a brief **91084 (1.62) Internal Credits: 4** Demonstrate understanding of basic concepts used in preservation and packaging techniques for product storage	**91047 (1.4) Internal Credits: 6** Undertake development to make a prototype to address a brief **91048 (1.5) External Credits: 4** Demonstrate understanding of how technological modelling supports decision-making
Unit Objectives/Learning outcomes- Students will: Use planning tools to effectively manage the technological development of an outcome to address a brief involves: • establishing key stages and resources required • planning actions to be undertaken within each key stage • identifying key planning decisions. • identifying review points • reviewing key planning decisions. • identifying critical review points for key stages • prioritising resources required to ensure the completion of the outcome. Demonstrate comprehensive understanding of basic concepts used in preservation and packaging techniques for product storage involving: • types of decay and preservation techniques and the links • legal requirements for labelling in a local environment and discuss why it is required • how a specific product in a local environment could effectively be preserved, packaged and stored to maintain product integrity over time. • why a particular preservation and packaging technique was chosen for a specific product to be stored in a local environment. • discussing how to control the storage environment to limit decay of different types of products during storage • comparing and contrasting preservation and packaging techniques for a product to be stored in a local environment.	**Unit Objectives/Learning outcomes-** **Students will:** Undertake development to make a justified prototype to address a brief involving: • selecting and using materials and/or components • selecting and using tools and equipment • applying practical techniques and processes to make a prototype • evaluating the prototype in terms of the fitness for purpose of the outcome for its • intended physical and social environment. • trialling, to inform selection and use of materials and/or components • trialling, to inform the selection and application of practical techniques and processes. • trialling the prototype to gain evidence of the its fitness for purpose in its intended physical and social environment • using evidence, including stakeholder feedback, to make a judgement of the prototype's fitness for purpose. Demonstrate comprehensive understanding of how technological modelling supports decision-making involving: • identifying the technological modelling undertaken to develop and trial a technological outcome • identifying evidence derived from technological modelling • describing how the evidence gained informed decisions about 'what could happen' and 'what should happen' for the technological outcome. • explaining the purpose of the technological modelling undertaken to develop and trial a technological outcome • explaining why the evidence gained enabled decisions to be made about 'what could happen' and 'what should happen' for the technological outcome. • discussing how decisions made about a technological outcome considered 'what could happen' and 'what should happen' • discussing how technological modelling identifies risk to support decision making.

Indicators:
Technological Knowledge
(Processing, packaging and storage Technology)

- Identify reasons and causes of food spoilage.
- Describe a range of preservation methods that maintain product integrity in a local environment.
- Explain the principles of packaging.
- Identify labelling requirements for a range of products to meet New Zealand standards.
- Describe methods of storage to include aspects such as hygiene and protection from cross contamination.

Planning for Practice

- Select appropriate planning tools suited to the development of an outcome.
- Use planning tools to manage resources to ensure completion of an outcome.
- Record initial plans and ongoing revisions.
- Justify planning decisions.

Outcome Development and Evaluation

- Generate design ideas informed by research and analysis of existing outcomes.
- Use functional modelling to refine design ideas.
- Evaluate design ideas in relation to the feasibility of the conceptual design.
- Evaluate proposed conceptual design against specifications.
- Evaluate suitability of materials and components and select those appropriate to the production of the outcome.
- Produce and trial the prototype and evaluate its fitness for purpose.
- Identify any changes to the prototype that would bring about an improvement.
- Use stakeholder feedback to inform decision making and evaluation.

Technological modelling

- Discuss how technological modelling provides a range if evidence to support decision making.
- Explain how technological modelling assists in the identification of risk.
- Describe how practical and functional reasoning enable us to explore the feasibility and acceptability of developing outcomes.

Learning activities
Learning Activities overview:

Initial Research Activities:

- Research –
- Examine existing solutions.
- Opinions from others.
- Ingredient examination. Identifying appropriate ingredient properties and environmental factors for designing and developing the preserve.
- Types of decay
- Labelling requirements
- Preservation and packaging techniques
- Health and Safety

Planning for Practice

- Look at planning tools used by others and yourself
- Identify and select appropriate planning tools suited to the development of the outcome (preserve)
- Use planning tools to manage resources to

Learning activities
Learning Activities overview:

Initial Research Activities:

- Research –
- Examine existing solutions.
- Opinions from others.
- Product examination. Identifying appropriate ingredient properties and environmental factors for designing and developing the fundraising product.

Brief Development Activities:

- Context and client brainstorming.
- Client and stakeholder interviews.
- Define client functional use attributes / specifications.
- Identify environmental considerations for the fundraising product and intended use.
- Investigate and select ingredients / confirm with client properties for functional intended use.
- Initial brief.
- Revise brief throughout development of the preserve.

ensure completion of an outcome. • Record initial plans and ongoing revisions. • Justify planning decisions. • Consult with a selected client and identified relevant stakeholders throughout the whole project. • Select and use resources through informed testing, trialing and evaluation. • Create a preserve idea to meet client brief design specifications. • Develop a brief and specifications for a specific client. • Utilize a range of planning techniques to help manage time and resources. • Undertake a range of self-reflection practices. • Develop practical skills competency - Y11 practical skills / basic procedures and developing skills in production techniques and processes. • Carry out various functional modeling processes to inform decision making • Follow a production sequence or adapt or create own sequence in discussion with teacher. • Produce a preserve. • Evaluate the outcome in consultation with the client and provide photographic evidence.	**Prototype and Functional Modeling Development Activities:** The starting point for this activity is to develop a conceptual design for Assessment 91047 (1.4) • Introduce definitions of Modelling- functional prototyping and an outcome • Look at different forms of modelling- CAD, sketching, verbal discussions, trialling, testing • Research technological modelling undertaken by a range of technologists. • Gather information to inform you so you can make informed prediction of possible and probable consequences of proposed outcome. • Choose forms of modelling appropriate for different stages of your technological practice based on context, needs and opportunities, stakeholders, specifications e.g. Verbal to discuss ideas for concept development, sketches for the concepts, trial and testing to experiment with cultural recipes, ingredients and cooking methods • *Identify the stages of technological practice and what should and could happen at each stage of development.* • Identify and access possible risks and present an argument • Discuss and justify how this will provide evidence for validity and reliability for your stakeholders. Present and justify your design concept that would most effectively address your stakeholder needs and consider wider social and physical environment. E.g. Prototyping allows for evaluation of fitness for purpose to meet stakeholder needs. • Explain how the forms of modelling enable you to identify the type, severity and probability of risk during the development of the outcome and manage them. • Discuss the importance of modelling and what part it played in making your food product fit for purpose. Concept sketches, development sketches. Select design. Client approval. Teach practical techniques. Development, experimentation and trialling, client testing, final design. Trialling and selecting ingredients / techniques: eg: Teacher demonstration – then student testing on own materials: Test results and conclusions. Apply conclusions to product development and production. Teach packaging and storage technique. Students' trial. • Plan own production sequence – discuss with teacher. • Production of product. • Ongoing client and stakeholder consultation

	throughout whole process.
	Functional Testing of Prototype Activities: • Taste test product by client and stakeholders in intended environment. • Include stakeholder consultation. • Provide evidence photos. • Complete final evaluation against brief specifications. Note potential areas for improvement. Refer to client and stakeholder comments on bag functionality, areas for improvement.
Key Competencies: • Thinking about problems and creating and developing solutions. Critical and reflective thinking. Using SCAMPER to develop design ideas and develop recipes • Using language, symbols and text to research, record data, investigate- following recipe instructions, collating data, completing sensory evaluations, using planning tools • Managing self in their organization of self directed projects and relating to others –client and stakeholders. Managing time and resources, meeting deadlines and following instructions • Participating in class and in the community through consultation and contribution- sharing ideas, participating in trial and testing, experimentation. • Relating to Others- sharing ingredients and equipment, ongoing consultation with teacher, client and stakeholders	**Values:** Through this unit the students will be encouraged to value: • excellence – aiming high and producing quality outcome • diversity- look at a range of products from different cultures • Equity- Respect all, be fair • innovation, enquiry and curiosity- being creative and original • community and participation for the common good- ecological sustainability including care for the environment • integrity – being honest, observing copyrights protocols, behaving ethically and morally • respect for themselves, others and human rights
Assessment Criteria **Technological assessment schedule is based on Components of Practice from the NZC at level 6** **Planning for practice** Students will critically analyse their own and others' past and current planning practice to make informed selection and effective use of planning tools and use these tools to develop a completed outcome. • critically analyse own and others use of planning tools to inform the selection of planning tools best suited for their use to plan and monitor progress and record reasons for planning decisions • use planning tools to establish and review key stages, identify and manage all resources, and to determine and guide actions to ensure completion of an outcome • use planning tools to record initial plans and	**Assessment Strategies**
	The evidence may be handed in to the teacher for assessment in portfolio format. This portfolio will need to contain: evidence of your learning journey from the brief analysis through to identifying the needs and opportunities and developing conceptual designs, trialling, evaluating before making the final outcome to make it fit for purpose. This evidence will come from a variety of sources such as your verbal, written and practical work. The portfolio is to be a combination of hard copies and digital work.
	A range of opportunities in Food Technology encourages the following approaches to assessment: • brainstorming • investigating • concept mapping • researching, evaluating and modifying • planning and development • using a range of equipment • group and individual work Research- gathering

ongoing revisions in ways which provide reasons for planning decisions made.

Outcome Development and Evaluation

Students will critically analyse their own and others outcomes to inform the development of ideas for feasible outcomes and through ongoing experimentation, trialling and modelling select, justify and develop a final outcome which is evaluated against the brief in terms of its fitness for purpose.

- generate design ideas that are informed by research and the critical analysis of existing outcomes;
- undertake functional modelling to refine design ideas and enhance their ability to address the specifications;
- evaluate design ideas in terms of their ability to support the development of a conceptual design for a feasible outcome;
- evaluate the conceptual design against the specifications to determine the proposed outcomes potential fitness for purpose;
- evaluate suitability of materials/components, based on their performance properties, to select those appropriate for use in the production of a feasible outcome;
- produce and trial a prototype of the outcome to evaluate its fitness for purpose and identify any changes that would enhance the outcome;
- use stakeholder feedback to support and justify key design decisions and evaluations of fitness for purpose.

Technological Knowledge

Students will understand the role and nature of evidence and reasoning when managing risk through technological modelling.

- describe practical and functional reasoning and discuss how they work together to enhance decision making during technological modelling
- explain the role of technological modelling in the exploration and identification of possible risk/s
- discuss examples to illustrate how evidence and reasoning is used during functional modelling to identify risk and make informed and justifiable design decisions
- discuss examples to illustrate how prototyping provides information to determine maintenance requirements to ensure minimal risk and optimal performance over time.

Students will be assessed against the criteria in the NQF Standards in the table below.

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materials; analysis of research
- Self and peer assessment
- presentation skills- oral; practical; research; ICT
- practical-design ideas; investigations; product analysis; development of a solution; skills
- evaluations-progressive and final
- trialing ideas and evaluating outcomes
- peer and self reviewing
- producing written, pictorial and verbal reports
- recording and keeping a diary or portfolio containing a record of progress
- interviewing others

- A variety of assessment procedures are included keeping in mind variations in attainment due to ethnicity, background, oral, written and practical ability.

- **Assessment strategies will include:**
- Research- gathering materials; analysis of research
- Self and peer assessment
- Presentation skills- oral; practical; research; ICT
- Practical-design ideas; investigations; product analysis; development of a solution; skills
- Evaluations-progressive and final

- Student work will be collected following the research and analysis exercises, **formative** feedback will be given against the criteria.

- Conferencing with each student for feed forward, regarding the student's intended development ideas is given

- Feedback is given on the quality of analysis of research, exercise and presentation of work.
- Students are to be encouraged to submit aspects of their planning and development work as it progresses for ongoing formative assessment

- Progress assessment against the standard assessment

- Final assessment

- Opportunity for resubmission following **summative** feedback.

Practical Assessment:

Students will apply management strategies in the preparation, production and service of food

NQF Standards

Assessment Standards	Title	Ext / Int	Credits
91045	Use planning tools to guide the technological development of an outcome to address a brief	Internal	4
91047	Undertake development to make a prototype to address a brief	Internal	6
91048	Demonstrate understanding of how technological modelling supports decision-making	External	4
91084	Demonstrate understanding of basic concepts used in preservation and packaging techniques for product storage	Internal	4

- **Resources** –
Human and Physical

- The use of ICT
- Student instruction and unit guideline sheet.
- Teachers will maintain the teacher's notes file developed for use with this unit of work.
- Resources for exploration of existing products and investigation to determined key attributes for preserves and promotional food product.
- Access to information sources for required the research e.g. Library, Internet.
- Food technology room and access to appropriate equipment.
- Digital Cameras
- Food resources
- Provision to store all students' experimentation work.
- Students are advised to use a 'working folder' for current work only and to store completed work in a locked cupboard supplied by the teacher.
- Students will be required to supply stationary and materials as necessary.
- "Starter products" samples, pictures, of existing food products that have potential for promotion
- Senior Food Technology and Nutrition Student Book and Teacher Resource CD
- Recipe books/ Magazines
- Pamphlets
- Videos/DVD/Clickview
- YouTube

Community Links
- Home and school
- School environment in the food lab
- Discussion of current market products students may have seen or tried as well as products tested in the food lab
- Students' discussions and sensory testing with chosen stakeholders.

Subject Links/Cross Curricular Links
- **Science**
  -Investigate products and processes to record and test observations.
  -Scientific knowledge to work towards a final solution.
  -Chemistry of food
- **Mathematics and Statistics**
  -Estimating, measuring and calculating quantities, --Time and costs.
- **Health and Physical Education**
  -Health, safety and hygiene
  -Making healthy food choices
  -Producing food that promote wellbeing and are safe for others
- **The Arts**
  -A range of media in presenting ideas and products
- **Social Sciences**
  -Understand the cultural factors, values and social structures that influence food choices
  -Current trends in availability of food and equipment
- **English**
  -oral, written and visual language when listening to, communicating and presenting information
- **Language**
  -discover how language and culture influence our personal, group, and national identities through food

Safety Issues
Students will be reminded of safe working practices within the food laboratory and when working at home.
- Health and Safety Code of Practice followed.
- HACCP in food lab is essential.
- Students made aware of their responsibility for their own safety and that of others.
- -No students participate in practical tasks without the appropriate footwear
- -clean apron
- -Hair tied back or covered
- -Clean nails and no watches, jewellery or loose clothing
- -cover up cuts or grazes with waterproof dressings
- Appropriate food preparation and storage
- Appropriate cooking methods and times followed

- Equipment monitored for chips or cracks and discarded
- Food testing for stakeholders is safe and ethical
- Sanitizing of work benches
- Dishwashers used for cleaning utensils, cutlery and crockery
- Laundry washed thoroughly immediately after use