



OTUMOETAI COLLEGE

2011

NCEA LEVEL 1

YEAR 11

FOOD TECHNOLOGY

“Technology is more than students learning useful practical skills. Our society in 2011 onwards requires enquiring and resourceful minds with the right attitude to work, and the ability to seek out innovative solutions. They must also have the talent to think as an individual and the cooperative skills to work with others.”

Teacher: Miss Atkin



OTUMOETAI COLLEGE
TECHNOLOGY LEVEL 1

PARENTS GUARDIANS

This booklet contains a detailed explanation of the course and its assessment methods.

Parents are encouraged to have a supportive interest in student work and in fact all candidates are required to research the opinions of all those who will be affected by the products that they make. Please note however that the student work must be their own or acknowledged in writing as having being done by someone else.

The course focus is as much about developing an innovative and determined attitude in students as it is about learning a good range of practical skills. In fact employers regard the “right attitude to work” as being the most important skill to develop.

Each student will be issued with a copy of this course outline including a breakdown of the year’s assessment and approximate year plan.

On taking this course students will be working towards **Achievement Standards**.

In Food Technology this year students will be working towards gaining Level One credits for the National Certificate of Educational Achievement.

The work done throughout the year will be assessed in two different ways:

- Internal Assessment – assignments/activities, and practical, carried out throughout the year in Achievement Standards.
- External Assessment – assignments/activities carried out throughout the year in Achievement Standards, assembled into a portfolio and sent at the end of the year to an official marker chosen by NZQA.

Achievement Standards.

Each has a credit weighting which contributes to the final NCEA total.

You can also gain different grades for each Achievement Standard:

Achieved, ***Achieved with Merit,*** ***Achieved with Excellence.***

As employers and universities are now giving priority to students with the grades of merits and excellent, it is important that students do not simply settle for grades of achieved.

From 2011 onwards, at level one for a student to gain an endorsement certificate in a subject course, they must pass at least 13 credits of which at least 3 credits must come from an external standard at the certificate level. Eg: all 13 must be at the level of Merit or above to gain a Merit endorsement certificate.

Parent / guardian signature:.....phone.....

You will be informed by phone if I have any concerns about student progress.



Welcome to the Year 11 Technology course. This is a one year, full-time course, which is designed to develop your competence and confidence in understanding and using existing technologies to create solutions to technological problems.

The course will develop your intellectual and practical skills by:

- Improving your technical knowledge and understanding of processes.
- Solving problems by working through the design process and making
- Understanding and being aware of the relationship between technology and society.

Technology is an internally and externally assessed National Certificate of Educational Achievement (NCEA) Level One subject. There are no exams. This means that all progress and performance is monitored and assessed by the teacher from the beginning of the year.

TECHNOLOGY MATRIX LEVEL 1

INTERNAL	EXTERNAL
1.1 AS91044 Undertake brief development to address a need or opportunity. <i>4 credits</i>	<i>(Assessed by an official NZQA marker)</i> 1.5 AS91048 Demonstrate understanding of how technological modelling supports decision-making . <i>4 credits</i>
1.4 AS91047 Undertake development to make a prototype to address a brief. <i>6 credits</i>	
1.60 AS91082 Implement basic procedures to process a specified product <i>4 Credits</i>	
1.62 AS91084 Demonstrate understanding of basic concepts used in preservation and packaging techniques for product storage <i>4 Credits</i>	

AIMS OF FOOD TECHNOLOGY

The aim of this course is to present a course of study which requires students to express ideas in practical terms, by using selected materials and the processes of Materials by applying principles of good craftsmanship.

OBJECTIVES

- ◇ To encourage students to obtain a sense of achievement and satisfaction through success and pride in their own work and achievements.
- ◇ To gain experience in decision making through practical problem solving.
- ◇ To develop self discipline and a range of practical skills which permit the safe and satisfying use of equipment and ingredients.
- ◇ To practise the skills of reading, measurement, calculations, reasoning and experimentation in the food technology room situation.
- ◇ To develop skills in searching for information and to present the findings.
- ◇ To make an honest appraisal of the quality of solutions in relation to original intentions.
- ◇ To work in depth with a variety of ingredients and processes.
- ◇ To develop design skills that will allow the transition of knowledge and ideas into practical outcomes

It is important that **you** organise **your** work and time.

Your studies will be completed in the classroom and at home.

All written and practical work is marked. Throughout the year your projects will be photographed and a portfolio of all your work will be sent away for marking of the external achievement standards. This ensures consistent grading throughout the whole country. For the internal Achievement Standards a sample of work from the whole school will be sent away for moderation purposes and the grading is completed by the school.

Your entire years work both practical and written work must be kept at school until this assessment process is completed unless otherwise advised.



- ➔ Arrive promptly to class.
- ➔ Attend school on a regular basis.
- ➔ Be prepared for class; i.e. bring your equipment to every class.
- ➔ Work to the best of your ability.
- ➔ Make all time count.
- ➔ Take direction from your teacher.
- ➔ Develop and use a plan of action for each unit of work to assist your planning and progress.
- ➔ Undertake research using a wide variety of sources.
- ➔ Evaluate your work and your progress regularly by undertaking your own thinking, discussing with your friends, parents and teacher and by using appropriate testing questioning.
- ➔ Complete assignments on time.



Work from this assessment will go towards AS91044, AS91047, AS91048, AS 91082 & AS 91084

Stage 1 Introductory Work

- ↪ Identify design constraints and opportunities created by the given issues/brief/specification and talking to stakeholders.
- ↪ Research what is currently available to satisfy one or more of the given issues
- ↪ Explore suitable ingredients for the production of your conceptual design ideas
- ↪ Explore methods of production applicable to your conceptual design ideas
- ↪ Summarise and evaluate your introductory work by identifying the 'key factors' that will influence the design and production of your project. Identify the needs and opportunities arising out of these key factors
- ↪ Write an adapted project brief which clearly outlines the key project requirements.

Stage 2 Design

- ↪ Research and record your concepts. Develop your design ideas evaluating each step
- ↪ Carry out experiments and trials to determine the suitability of your developing ideas. Use photographs and written text to record your work
- ↪ Save every bit of work you do. Record any feedback you get from anyone you test ideas on
- ↪ Continually evaluate your developing designs against the issues, brief and it's specifications
- ↪ Present your final design in the form of accurate recipes and photographs

Stage 3 Plan of Action

- ↪ Develop an initial 'plan of action'. Consider the main tasks within the project and allocate time and resources
- ↪ Your 'plan of action' is a working document. Continually review and refine it through the life of the project
- ↪ Include photographs and diagrams of mock-ups and results of testing for the 'plan of action'
- ↪ Document all materials and resources used and/or considered
- ↪ Compare 'anticipated' resources with 'actual' in your final evaluation

Stage 4 Present Your Technological Solution

- ↪ Present your completed Project finished to a high standard
- ↪ Evaluate what you did and the order in which you did it
- ↪ The evidence presented for assessment **must** demonstrate how this addresses the specifications of the brief.
- ↪ Have an evaluation filled out by the end user, you the maker, the teacher and a photo of your project

Form a portfolio that includes all relevant documentation of your planning and production.

Subject Reference	Generic Technology 1.1 AS91044				
Title	Undertake brief development to address a need or opportunity				
Level	1	Credits	4	Assessment	Internal
Subfield	Technology				
Domain	Technology – General Education				
Registration date	31 December 2014	Date version published	20 January 2011		

This achievement standard involves undertaking brief development to address a student identified need or opportunity.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Undertake brief development to address a need or opportunity. 	<ul style="list-style-type: none"> Undertake detailed brief development to address a need or opportunity. 	<ul style="list-style-type: none"> Undertake comprehensive brief development to address a need or opportunity.

Explanatory Notes

- This achievement standard is derived from Level 6 of the Technology learning area (Technological Practice strand) in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 1998; the Health and Safety in Employment Act 1992; and in the *Technology Curriculum Support*, October 2010 that can be found at <http://www.techlink.org.nz/curriculum-support/pdfs/technology-curriculum-support-Oct-10.pdf>.

Further information about brief development can be found at <http://www.techlink.org.nz/curriculum-support/papers/practice/brief-dev/index.htm> and <http://www.techlink.org.nz/curriculum-support/indicators/index.htm>.

- Undertake brief development to address a need or opportunity* involves:
 - identifying a need or opportunity as a result of exploring the given context and issue
 - reflecting consideration of the social and physical environment
 - reflecting key stakeholder's opinion
 - describing the outcome to be developed
 - identifying the physical and functional attributes needed for the outcome
 - producing a final brief comprised of a conceptual statement and specifications.

Undertake detailed brief development to address a need or opportunity involves:

- explaining how the need or opportunity is derived from the issue
- reflecting iterative consideration of the social and physical environment and key stakeholder's opinion
- describing the purpose of the outcome, within the intended environment
- explaining the physical and functional attributes needed for the outcome.

Undertake comprehensive brief development to address a need or opportunity involves:

- justifying why such an outcome should be developed
- justifying why the identified physical and functional attributes are needed for the outcome.

- 3 It is intended that students will explore a given context and issue provided by the teacher in order to identify a need or opportunity, and undertake a process of brief development resulting in the communication of the nature of an outcome that resolves the need or opportunity. Stakeholders must be accessible to students.

A *need* refers to an identified requirement related to a person, group or environment (social and physical).

An *opportunity* refers to an identified possibility related to a person, group or environment (social and physical).

- 4 An outcome for the purpose of this achievement standard is a conceptual design for an outcome and/or a technological outcome itself (prototype).
- 5 Conditions of Assessment related to this achievement standard can be found at <http://www.tki.org.nz/e/community/ncea/conditions-assessment.php>.

Subject Reference	Generic Technology 1.4 AS91047				
Title	Undertake development to make a prototype to address a brief				
Level	1	Credits	6	Assessment	Internal
Subfield	Technology				
Domain	Technology – General Education				
Registration date	31 December 2014	Date version published	20 January 2011		

This achievement standard involves undertaking development to make a prototype to address a brief.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Undertake development to make a prototype to address a brief. 	<ul style="list-style-type: none"> Undertake development to make a refined prototype to address a brief. 	<ul style="list-style-type: none"> Undertake development to make a justified prototype to address a brief.

Explanatory Notes

- This achievement standard is derived from Level 6 of the Technology learning area (Technological Practice strand) in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 1998; and The Health and Safety in Employment Act 1992, and in the *Technology Curriculum Support*, October 2010 that can be found at <http://www.techlink.org.nz/curriculum-support/pdfs/technology-curriculum-support-Oct-10.pdf>.

Further information about outcome development and evaluation can be found at <http://www.techlink.org.nz/curriculum-support/papers/practice/outcome-dev/index.htm> and <http://www.techlink.org.nz/curriculum-support/indicators/index.htm>.

For resources relating to legal, ethical and moral responsibilities, refer to the Techlink website at <http://www.techlink.org.nz/IP/links.htm>.

- Undertake development to make a prototype to address a brief* involves:

 - 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.

Undertake development to make a refined prototype to address a brief involves:

- trialling, to inform selection and use of materials and/or components
- trialling, to inform the selection and application of practical techniques and processes.

Undertake development to make a justified prototype to address a brief involves:

- 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.

- 2 The brief may be provided by the teacher or developed by the student. If the student develops the brief then the teacher must ensure that it provides sufficient guidance to enable the prototype to be developed. The brief used for this standard must allow for a range of outcomes and include a conceptual statement and specifications for the prototype to be evaluated against.
- 4 The physical environment refers to the place where the final outcome will be situated. The social environment refers to those who will interact with the final outcome.
- 5 A *prototype* is a finished outcome that is ready to be trialled in situ. It is developed through technological practice and is reflective of accepted techniques and tolerances, and safety and legal responsibilities. Prototyping is the trialling of the prototype to gain evidence for the evaluation of the outcome's fitness for purpose in its intended physical and social environment.
- 6 Fitness for purpose refers to the outcome's ability to address its brief when situated in its intended location.

Conditions of Assessment related to this achievement standard can be found at <http://www.tki.org.nz/e/community/ncea/conditions-assessment.php>

Subject Reference	Generic Technology 1.5 AS91048				
Title	Demonstrate understanding of how technological modelling supports decision-making				
Level	1	Credits	4	Assessment	External
Subfield	Technology				
Domain	Technology – General Education				
Registration date	31 December 2014	Date version published	20 January 2011		

This achievement standard involves demonstrating an understanding of how technological modelling supports decision-making.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Demonstrate understanding of how technological modelling supports decision-making. 	<ul style="list-style-type: none"> Demonstrate in-depth understanding of how technological modelling supports decision-making. 	<ul style="list-style-type: none"> Demonstrate comprehensive understanding of how technological modelling supports decision-making.

Explanatory Notes

- 3 This achievement standard is derived from Level 6 of the Technology learning area (Technological Knowledge strand) in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 1998; and The Health and Safety in Employment Act 1992, and in the *Technology Curriculum Support*, October 2010 that can be found at <http://www.techlink.org.nz/curriculum-support/pdfs/technology-curriculum-support-Oct-10.pdf>

Further information about technological modelling can be found at <http://www.techlink.org.nz/curriculum-support/papers/knowledge/tech-model/index.htm> and <http://www.techlink.org.nz/curriculum-support/indicators/index.htm>.

- 4 *Demonstrate understanding of how technological modelling supports decision-making* involves:
- identifying the technological modeling 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.

Demonstrate in-depth understanding of how technological modelling supports decision-making involves:

- explaining the purpose of the technological modeling 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.

Demonstrate comprehensive understanding of how technological modelling supports decision-making involves:

- 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.

5 *Technological modelling* refers to both functional modeling and prototyping.

6 Assessment Specifications for this achievement standard can be accessed through the Technology Resources page found at <http://www.nzqa.govt.nz/ncea/resources>.

Subject Reference	Processing Technologies 1.60 AS91084		
Title	Implement basic procedures to process a specified product		
Level	1	Credits	4
		Assessment	Internal
Subfield	Technology		
Domain	Processing Technologies		
Status	Registered	Status date	20 January 2011
Planned review date	31 December 2014	Date version published	20 January 2011

This achievement standard requires the implementation of basic procedures that are suitable for use with a range of materials when processing a specified product.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
Implement basic procedures to process a specified product.	Skilfully implement basic procedures to process a specified product.	Efficiently implement basic procedures to process a specified product.

Explanatory Notes

- 1 This achievement standard is derived from the Level 6 achievement objectives from the Technology learning area in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 1998; and The Health and Safety in Employment Act 1992.

Further information can be found at <http://www.techlink.org.nz>.

- 2 *Implement basic procedures to process a specified product* involves:
- following a set of processing operations to make a product that meets specifications
 - undertaking a range of appropriate tests to demonstrate the product meets specifications
 - applying processing operations that comply with relevant health and safety practices.

Skilfully implement basic procedures to process a specified product involves:

- showing independence and accuracy when executing processing operations and tests.

Efficiently implement basic procedures to process a specified product involves:

- undertaking processing operations and tests in a manner that economises time, effort and materials.

- 3 *To process* refers to the combining of materials to make a product.
- 4 *Specified product* refers to a product and its relevant specifications, including material specifications. The specifications must be of sufficient rigour to allow the student to meet the standard. The specifications need to be agreed prior to the product being made. They may be teacher-given or developed in negotiation with the student.
- 5 *Basic procedures* are those that require the student to perform a linear sequence of operations, as instructed, to make a product. The material/s and operations to be undertaken, and a step-by-step guide must be determined by the teacher.
- 6 Materials may include but are not limited to – food ingredients, plant extracts, micro-organisms, concrete, fibreglass, woodchips, recycled materials, resins.
- 7 Products may include but are not limited to – fermented or non-fermented foods and beverages; biologically active products; composts; household chemicals; toiletries; cosmetics; wood composites; dyed fibre and/or cloth; paper; moulded concrete, resin or fibreglass products.
- 8 Processing operations for this standard include:
 - one or more of – measuring, shaping, or finishing
eg weighing, counting, grinding, slicing, moulding, and laminating.
 - one or more of – contamination prevention or disposal
eg hygienic handling of materials, sanitising, working aseptically, safe disposal of biologically active materials.
 - one or more of – mixing, extracting, separating or growing
eg liquid mixing, blending, agitating, mechanical peeling, sieving, washing, juicing, crushing, culturing by plating.
 - one or more of – heating, cooling or reacting
eg liquid heating, heating a solid, maintaining temperature for growth, steam setting, acidifying, controlling of enzymes.
- 9 Tests may include but are not limited to – testing for pH, temperature, colour, size and shape, ripeness, and whether the product is cooked, set or matured.
- 10 Conditions of Assessment related to this achievement standard can be found at <http://www.tki.org.nz/e/community/ncea/conditions-assessment.php>.

Subject Reference	Processing Technologies 1.62 AS91084		
Title	Demonstrate understanding of basic concepts used in preservation and packaging techniques for product storage		
Level	1	Credits	4
		Assessment	Internal
Subfield	Technology		
Domain	Processing Technologies		
Status	Registered	Status date	20 January 2011
Planned review date	31 December 2014	Date version published	20 January 2011

This achievement standard requires demonstrating an understanding of basic concepts used in preservation and packaging techniques for product storage.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of basic concepts used in preservation and packaging techniques for product storage.	Demonstrate in-depth understanding of basic concepts used in preservation and packaging techniques for product storage.	Demonstrate comprehensive understanding of basic concepts used in preservation and packaging techniques for product storage.

Explanatory Notes

- 1 This achievement standard is derived from the Level 6 achievement objectives from the Technology learning area in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 1998; The Health and Safety in Employment Act 1992; and the New Zealand Food Safety Authority website at <http://www.nzfsa.govt.nz>.

Further information can be found at <http://www.techlink.org.nz>.

For resources relating to legal, ethical and moral responsibilities, refer to the Techlink website at <http://www.techlink.org.nz/IP/links.htm>.

- 2 *Demonstrate understanding of basic concepts used in preservation and packaging techniques for product storage* involves describing:
 - types of decay and preservation techniques
 - legal requirements for labelling in a local environment
 - how a specific product in a local environment could effectively be preserved, packaged and stored to maintain product integrity over time.

Demonstrate in-depth understanding of basic concepts used in preservation and packaging techniques for product storage involves explaining:

- the links between types of decay and preservation techniques
- why a particular preservation and packaging technique was chosen for a specific product to be stored in a local environment.

Demonstrate comprehensive understanding of basic concepts used in preservation and packaging techniques for product storage involves:

- discussing how to control the storage environment to limit decay of different types of products during storage
- discussing why legal labelling is required in a local environment
- comparing and contrasting preservation and packaging techniques for a product to be stored in a local environment.

- 3 Types of decay may include but are not limited to – microbial growth, separation, loss of colour, loss or gain of moisture, loss of viability, loss of nutritional content.
- 4 Local environments may include but are not limited to – the home, school canteen, sports club, school camp or marae. For the purposes of this achievement standard, storage conditions in local environments are limited to – ambient, chilled or frozen.
- 5 *Preservation techniques* may include but are not limited to – chilling, freezing, heating, dehydration, control of humidity, provision of nutrients, use of chemical additives (eg salt, sugar, food acid such as vinegar or ascorbic acid).
- 6 *Packaging techniques* may include but are not limited to – cellophane and plastic bags, plastic and cardboard boxes, glass and plastic bottles and jars.
- 7 Types of products may include but are not limited to – fermented or non-fermented foods and beverages; fresh horticultural products; biologically active products; composts; household chemicals; toiletries; cosmetics; wood composites; dyed fibre/cloth; paper; moulded concrete, resin or fibreglass products.
- 8 Conditions of Assessment related to this achievement standard can be found at <http://www.tki.org.nz/e/community/ncea/conditions-assessment.php>.



OTUMOETAI COLLEGE
TECHNOLOGY LEVEL 1

COURSE COMPLETION

At the completion of the course each student will have two folios of design and written work, the completed practical work associated with them, a design brief portfolio, and a case study portfolio.

Policy: The two factors involved in satisfactory completion of this qualification are:

- (a) Satisfactory attendance.
- (b) Fulfilment of course requirements.

Candidates who fail to comply with ***either*** of these factors will have their qualification entry cancelled.

DEADLINES

Deadline dates for assignments are ***NOT*** normally negotiable – except under mitigating circumstances. If you have personal problems that prevent you meeting deadlines or attending regularly and punctually, please speak to me at the ***earliest opportunity***.

When an assignment has been set it must be submitted on or before the due date. The start of the nominated period on the due date is the deadline.

Any student who envisages being unable to complete an assignment on time through circumstances beyond their control should request an extension from the teacher.

“Extension Application” must be made on an official application form at least three school days before the due deadline. At the time of request, work done to date must be displayed along with a signed explanation for the request from a parent/guardian. Failure to submit a satisfactory effort will result in no extension being granted. Any extension will not normally exceed three days beyond the original deadline.

A student who chooses not to do a piece of work and gets 0 score will be warned of the minimum course requirements.

HEALTH AND SAFETY

Otumoetai College has a Health and Safety Policy in accordance with the Health and Safety in Schools Code of Practice 1993. Students shall adhere to the safety rules.

A Food Technology room environment can be dangerous; you must take reasonable care so as not to endanger yourself and others. You must act in a responsible manner at all times. The school will supply safety equipment which is provided for your health and safety, this **MUST** be used at all times in the food technology room – do not misuse the equipment or attempt to use machinery on which you have not been instructed.

And finally ...

Remember that your teacher is here to help you through the course and provide you with the opportunity for success. If you have any difficulties, then please tell the teacher at the **earliest** opportunity so that they can resolve the problem.

You have made the initial move in choosing this course as an important step in your career. We want this to be a happy and successful year for you. We trust that you will be able to look back and see it as the starting point for a successful career.

LIST OF COURSE REQUIREMENTS

You will be required to provide the following equipment:

- A4 writing paper and A3 drawing paper
- An A3 size drawing folder or an A3 ring-binder with clear plastic pockets
- Calculator
- Drawing equipment
- Choice of blue/black/red pens
- Good quality marker pens, coloured pencils, notebook/pad

It is also useful for students to have their own memory stick.

TERMS & JARGON

A Culture of Technological Innovation: *This can be addressed by looking at how innovation occurs or exercises in creativity [thinking outside the square!]. Much of this term relates to how technologies influence society and/or how society influences technological outcomes. Remember that after an initial **eureka** there is always a process of development i.e. as in the internal standards.*

Brief: *Made up of a conceptual statement [c.f.] and a set of specifications [c.f.].*

Conceptual Statement: *Sentence or sentences that describe the desired outcome and its relationship to the need or opportunity i.e. What we are doing and why we are doing it?*

Cultural Factors: *Tikanga Maori, Treaty of Waitangi, NESB, appropriate language/symbols [c.f. technology transfer].*

Develop: *This term implies that the component of practice is created in an ongoing way and is a part of a student's technological practice. There must be evidence of revision, refinement and addition of the practice that is backed up with the **'why'** they took place.*

Economic factors: *these will relate to a stakeholder's ability to afford the solution or a consideration of what are appropriate materials, there is also a relationship to 1.4 which considers production and process.*

Environmental factors: *a consideration of the environment in which the solution will exist e.g. how the product will be disposed of when it is finished?*

Implications: *These show the connections between say key factors and the stakeholders of the issue i.e. safety is a key factor in this issue because ...*

Key factors: *Important parts of the issue.*

Knowledge bases: *these are sometimes called knowledge domains e.g. chemistry, engineering, nutrition, mathematics. Students should recognise that they will need to access and use in practice a range of knowledge. They will need to have a method of gathering and then screening knowledge to use in the development of an outcome.*

Legal factors: *any specification that has a legal basis e.g. distance between bars on a cot, baby walkers, use on the road.*

Political factors: *this is how government (local & national) policy and agenda impact on solution development e.g. possible embargo on GE products.*

Social factors: *trends, current events, fashions, peer groups e.g. the use of cell phones by teenagers.*

Solution / Outcome: *These are often used as interchangeable terms. Both identify the result of undertaking technological practice.*

Specifications: *These are both the desirable attributes and the constraints [see tech. practice handout].*

Stakeholder beliefs, ethics, and values: *these will colour a stakeholder's understanding of; a need/opportunity, the most important attributes of an outcome, how it will be used by them and others. These influences will depend on all the aspects of the stakeholder's background – culture, knowledge, skills, position in life etc. Students should show understanding of these influences.*

Stakeholders: *These are all the people/groups that will affect and be affected by the solution. They must be prioritised with the user (user group) at the top.*

User (group): *This is the primary stakeholder. This person or group will have the most influence over the development of the solution.*



A plan of action and how this has guided you in developing your technological solution (Students under the direction and guidance of the teacher discuss what a plan of action means to them.)

Before embarking on any project to do it successfully one has to plan ahead.

This planning may take the form of a list of things to do and think about before developing a technological solution.

Headings that might prove to be useful are:

- Time and dates
- Deadlines
- Resources needed
- Skills required
- Where help may be obtained
- Cost
- What research is needed
- Personal comments
- Key Milestones (key decisions)
- Stakeholder consultation
- What needs to be done
- How you will do it
- Safety
- Quality control checks
- Modifications and justifications

This list is a guide and the method you use to develop your own plan of action is a personal choice.

It is important that you think ahead in order to utilise every available minute during class time and to be confident that you have considered all possibilities to ensure the success of making your project.

Your plan of action will guide you in your making but as you progress you may find that your plan needs altering or you may find you will have to follow a different path due to different circumstances or unperceived problems.

Through out the process of putting your plan of action into action you will need to document each stage in order to provide hard evidence. In your portfolio follow the design process: investigation, initial ideas, design development, final idea, working drawing, and evaluate through out. Document the changes you have made, the problems you have encountered, how you have solved problems, new developments. Justify your decisions and keep your portfolio alongside you in class and take time to write up your thoughts on a regular basis. This could be like a running commentary or a diary. Use the digital camera to remind you of the different stages you go through/or purchase a disposable camera. Keep all experiments and failures and say how you have developed from them. Again your portfolio is a personal record and therefore you decide how you are going to record your development and present it.



- ☆ Issue – Context – Teacher directed
- ☆ Needs & opportunities
- ☆ Identify Key Factors
 - Society – Effects on Society
 - Stakeholders
- ☆ Consider interaction between key factors
- ☆ Research conceptual knowledge – safety
- ☆ Consult stakeholders
- ☆ Write brief
- ☆ Consult stakeholders
- ☆ Write specifications
- ☆ Consult stakeholders
- ☆ Concepts
- ☆ Consult stakeholders
- ☆ Development
- ☆ Consult stakeholders
- ☆ Final design
- ☆ Consult stakeholders
- ☆ Model solution – procedural knowledge safety
- ☆ Consult stakeholders
- ☆ Evaluation and testing against essential requirements of the brief