NCEA Review and Maintenance Programme – 2026 updates

Review and maintenance work has been undertaken for all three levels of NZC NCEA for 2026. This pdf document contains the updated Course Outlines for **Materials and Processing Technology Level 1**. In January 2026 the NCEA website will be updated with these changes for Level 1, and the pdf version will be removed as it will no longer be necessary. For Levels 2 and 3, assessment materials will be updated on TKI in January. For external assessment specifications, refer to the NZQA website.

Subject: Materials and Processing Technology Level 1

Product	What's changed?
Course Outline 1	Updated for clarification and to align with 1.3 revisions.
Course Outline 2	Updated for clarification and to align with 1.3 revisions.
Course Outline 3	Updated for clarification and to align with 1.3 revisions.

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Materials and Processing Technology NCEA NZC Level 1 Course Outline 1

Purpose: This example Course Outline (CO) has been provided to support teachers to understand how the new subject Learning Matrix and NCEA Achievement Standards might be used to create a year-long programme of learning.

Context: This Course Outline weaves cultural values and narratives as well as celebration and sustainability with technological practice, subject specialist knowledge, and understanding of celebration and sustainability. Ākonga will learn to use a food technology approach as they embark on their Materials and Processing Technology learning journey.

Significant Learning	Learning Activities and Assessment Opportunities
- Understand how mātāpono Māori, tukanga, manaakitanga, kaitiakitanga, rangatiratanga, whanaungatanga, kotahitanga, wairuatanga, and auahatanga can be interlinked and woven together during the development and creation of Materials and Processing Technology outcomes - Understand how the Pacific values of alofa, vā, fonua, vaka, and kuleana are interlinked and woven together during the development and creation of Materials and Processing Technology outcomes - Understand the importance of the physical safety of themselves and others when using materials, tools, and equipment during the development and creation of Materials and Processing Technology outcomes for end users - Understand the importance of whanaungatanga through wānanga and talanoa to develop outcomes centred around the needs of a person, whānau, or community during the development and creation of Materials and Processing Technology outcomes - Explore the properties of materials during the development and creation of Materials and Processing Technology outcomes - Manipulate, transform, combine, and form materials during the development and creation of Materials and Processing Technology outcomes	**Introduction to food technology** Duration — 3 weeks **Introduction to cultural values** Introduce ākonga to Māori and Pacific values and their significance in food technology. - Show a presentation or video on Māori and Pacific values, including the significance of each value. - Engage ākonga in a discussion about how these values align with Codes of Practice and expectations in a food technology room. - Have ākonga reflect on how these values can be applied to maintain a positive classroom environment and adhere to expectations and routines. **Safety and hygiene** Emphasise the importance of physical safety in a foods room. - Refresh or introduce new ākonga to safety and hygiene requirements through practical application. **Recipe scaling and collaboration** Familiarise ākonga with recipe scaling, collaboration, and teamwork in food technology. - Provide ākonga with a recipe and challenge them to scale it up or down based on different serving sizes. - Encourage ākonga to work collaboratively in teams to complete the recipe scaling task. - Discuss the importance of teamwork and effective collaboration, linking it to the concept of whanaungatanga and kotahitanga. **Food ordering systems** Refresh or introduce ākonga to food ordering systems. - Discuss the importance and implications of both following recipes and completing accurate food orders. - Ākonga work collaboratively to complete the first food order of the year. Discuss and peer review prior to submitting.

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Significant Learning	Learning Activities and Assessment Opportunities
	• Provide ākonga formative feedback based on the various introductory skills outlined above. **Brief with specifications** Discuss a brief with specifications and how to meet those using evidence. • What is a brief? • Why is it important? • What should be included in a brief? • What is an attribute? • What is a specification? • What is the difference between an attribute and a specification? • How do we know when a brief with specifications has been met, fitness for purpose? What evidence will support this? How will we obtain this evidence? **Ongoing reflection and discussion** Encourage ākonga to reflect on their learning and to relate it to the values and their significance in food technology. Ākonga will: • engage in a group discussion or individual reflection on how their activities in the class align with Māori and Pacific values and Codes of Practice • engage in a group discussion about the importance of safety of themselves and others • share their insights and lessons learned during the introductory activities.
• Understand how mātāpono Māori, tukanga, manaakitanga, kaitiakitanga, rangatiratanga, whanaungatanga, kotahitanga, wairuatanga, and auahatanga can be interlinked and woven together during the development and creation of Materials and Processing Technology outcomes • Understand how the Pacific values of alofa, vā, fonua, vaka, and kuleana are interlinked and woven together during the development and creation of Materials and Processing Technology outcomes • Understand the importance of whanaungatanga through wānanga and talanoa to develop outcomes centred around the needs of a person, whānau, or community during the development and creation of Materials and Processing Technology outcomes • Understand the influence of worldviews and society during the development and creation of Materials and Processing Technology outcomes • Understand the influence of Materials and Processing Technology outcomes on society • Use planning, testing, and stakeholder feedback to inform decision-making during	## Manaakitanga and sustainable practices Duration — 15 weeks Ākonga will explore the principles of manaakitanga and kaitiakitanga while applying sustainable practices during the development and creation of a Materials and Processing Technology outcome within the context of food technology. **Cultural values and sustainability** Ākonga will understand how manaakitanga influences the choice of food items and demonstrates care for a person, whānau, or community, while considering the application of sustainable practices in the development and creation of a design and an outcome. **Research and ideation** Ākonga will: • explore the principle of manaakitanga and how it influences the development and creation of food items • brainstorm potential stakeholders from among people, whānau, or the community • research their chosen person, whānau, or community and provide reasons for their selection • investigate kaitiakitanga and its impact on design decisions

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Significant Learning	Learning Activities and Assessment Opportunities
the development and creation of Materials and Processing Technology outcomes • Apply sustainable practices during the development and creation of Materials and Processing Technology outcomes • Explore the properties of materials during the development and creation of Materials and Processing Technology outcomes • Explore techniques to determine appropriate functional attributes during the development and creation of Materials and Processing Technology outcomes • Use technological practice to solve real-world problems and realise opportunities during the development and creation of Materials and Processing Technology outcomes • Understand how 'Ka mua, ka muri' influences reflective practice during the development and creation of Materials and Processing Technology outcomes	• explore sustainable practices, including ingredient selection, economic use, and waste management, and consider their role in design decisions. **Development** Ākonga will: • carry out and use research. In doing so, they will empathise with the chosen person, whānau, or community to inform and determine their needs or potential opportunities. • generate a range of design ideas that embody manaakitanga and respond to needs or opportunities • utilise research and understanding about the application of sustainable practices to shape their design ideas • develop a final design that can be developed into a tangible outcome • gather stakeholder feedback from at least two sources to refine their outcome • develop the outcome through stakeholder feedback, and research, incorporating both prior and new knowledge. **Technological modelling and evaluation** Ākonga will: • test materials and trial techniques to determine performance properties and most suitable physical and functional attributes for the food outcome • evaluate the results of these tests and trials against the brief with specifications • compare materials and techniques to select the most appropriate for the development of the food outcome • assess how testing, trialling, and stakeholder feedback contribute to improving fitness for purpose during the development and refinement of the food outcome. **Brief development** Ākonga will refine the brief with specifications, considering design decisions, testing, trialling, and stakeholder feedback from multiple sources to ensure the food outcome aligns with the principles of manaakitanga and sustainable practices. **Final food outcome and evaluation** Ākonga will: • develop a comprehensive plan for the final food outcome, including material selection, techniques, equipment, and necessary resources • create the final food outcome, demonstrating manaakitanga for the identified person, whānau, or community • evaluate how well the food outcome meets the brief with specifications while considering needs or opportunities to determine fitness for purpose • analyse the food outcome's fitness for purpose in its intended environment. Learning covered will provide opportunities to collect evidence towards AS 92012 (1.1) Develop a Materials and Processing Technology outcome in an authentic context AND AS 92014 (1.3) Demonstrate understanding of sustainable

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Significant Learning	Learning Activities and Assessment Opportunities
	practices in the development of a Materials and Processing Technology design.

Exploration of celebration through cultural values and technological practice

Duration — 14 weeks

- Understand how mātāpono Māori, tukanga, manaakitanga, kaitiakitanga, rangatiratanga, whanaungatanga, kotahitanga, wairuatanga, and auahatanga can be interlinked and woven together during the development and creation of Materials and Processing Technology outcomes

- Understand how the Pacific values of alofa, vā, fonua, vaka, and kuleana are interlinked and woven together during the development and creation of Materials and Processing Technology outcomes

- Take into consideration the cultural safety of themselves and others during the development and creation of Materials and Processing Technology outcomes

- Explore the properties of materials during the development and creation of Materials and Processing Technology outcomes

- Explore techniques to determine appropriate functional attributes during the development and creation of Materials and Processing Technology outcomes

- Manipulate, transform, combine, and form materials during the development and creation of Materials and Processing Technology outcomes

- Use planning, testing, and stakeholder feedback to inform decision-making during the development and creation of Materials and Processing Technology outcomes

- Understand the importance of the physical safety of themselves and others when using materials, tools, and equipment during the development and creation of Materials and Processing Technology outcomes for end users

- Understand the influence of worldviews and society during the development and creation of Materials and Processing Technology outcomes

- Understand how 'Ka mua, ka muri' influences reflective practice during the development and creation of Materials and Processing Technology outcomes

- Use technological practice to solve real-world problems and realise opportunities during the development and creation of Materials and Processing Technology outcomes

Exploration of the theme of celebration within cultural and technological contexts

- What is the significance of celebration in our culture and community?
- What does celebration look like in the context of food technology?
- Are there upcoming celebrations that offer opportunities for meaningful technological projects?

Integration of cultural values and safety

During this exploration, ākonga will connect the theme of celebration with cultural values, safety considerations, and technological practices. They will:

- brainstorm and identify individuals, whānau, or communities for whom a food outcome tied to a celebration would be meaningful
- conduct research to explain why these individuals, whānau, or communities were chosen (identifying needs or opportunities)
- ensure cultural safety by considering the cultural appropriateness of their projects
- record the purpose of their project, key research details, and contextual requirements.

Material exploration, and safety

Ākonga will:

- experiment with different materials, manipulating, transforming, combining, or forming them to assess suitability for their projects
- test the most relevant materials and components to determine their suitability
- trial various techniques to evaluate their appropriateness
- assess these results against the brief with specifications
- gather feedback from stakeholders, including the identified person, whānau, or community, regarding material experimentation
- compare different materials and a range of techniques to select the most suitable options for the food outcome and its fitness for purpose
- recognise and practice the importance of physical safety for themselves and others when using materials, tools, and equipment during the project development.

Concept development with cultural significance

Ākonga will:

- generate a range of concepts rooted in cultural values and safety considerations
- carry out and use research. In doing so, they will empathise with the chosen person, whānau, or community to inform their

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Significant Learning	Learning Activities and Assessment Opportunities
	concepts and to determine their needs or potential opportunities.
	• gather and apply feedback from multiple sources, including the identified person, whānau, or community to select a concept for development
	• develop the concept based on stakeholder feedback, research, and prior knowledge.
	Brief refinement with cultural and safety considerations
	Ākonga will refine the brief with specifications, ensuring that it reflects cultural values, safety considerations, and stakeholder feedback from various sources, including the identified person, whānau, or community.
	Final food outcome reflecting cultural values, safety, and fitness for purpose
	Ākonga will:
	• develop a comprehensive plan for the final food outcome, including selected materials, techniques, equipment, and resources with cultural significance
	• create the final food outcome that celebrates cultural values while adhering to food room safety requirements
	• analyse how material exploration, cultural considerations, and safety have informed the development of the final food outcome
	• assess the food outcome's fitness for its intended cultural, safety, and technological context.
	Learning covered will provide opportunities to collect evidence towards AS 92013 (1.2) Experiment with different materials to develop a Materials and Processing Technology outcome AND AS 92015 (1.4) Demonstrate understanding of techniques selected for a feasible Materials and Processing Technology outcome.

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Materials and Processing Technology NCEA NZC Level 1 Course Outline 2

Purpose: This example Course Outline (CO) has been provided to support teachers to understand how the new subject Learning Matrix and NCEA Achievement Standards might be used to create a year-long programme of learning.

Context: This Course Outline weaves cultural values and narratives as well as Ko tēnei pakiwaitara and identity with technological practice, subject specialist knowledge, and understanding of sustainable practices as ākonga embark on their Materials and Processing Technology learning journey.

Significant Learning	Learning Activities and Assessment Opportunities
- Understand how mātāpono Māori, tukanga, manaakitanga, kaitiakitanga, rangatiratanga, whanaungatanga, kotahitanga, wairuatanga, and auahatanga can be interlinked and woven together during the development and creation of Materials and Processing Technology outcomes - Understand how the Pacific values of alofa, vā, fonua, vaka, and kuleana are interlinked and woven together during the development and creation of Materials and Processing Technology outcomes - Take into consideration the cultural safety of themselves and others during the development and creation of Materials and Processing Technology outcomes - Understand the importance of the physical safety of themselves and others when using materials, tools, and equipment during the development and creation of Materials and Processing Technology outcomes for end users - Understand the importance of whanaungatanga through wānanga and talanoa to develop outcomes centred around the needs of a person, whānau, or community during the development and creation of Materials and Processing Technology outcomes - Understand the influence of worldviews and society during the development and creation of Materials and Processing Technology outcomes. - Understand the influence of Materials and Processing Technology outcomes on society - Explore the properties of materials during the development and creation of Materials and Processing Technology outcomes - Explore techniques to determine appropriate functional attributes during the development and creation of Materials and Processing Technology outcomes - Use planning, testing, and stakeholder feedback to inform decision-making during the development and creation of Materials and Processing Technology outcomes - Use technological practice to solve real-world problems and realise	### Ko tēnei pakiwaitara (Tell me a story) Duration — 12 weeks **Overview** Ākonga will explore different materials as they experiment with them through manipulating, transforming, combining, or forming to understand their properties and develop auahatanga. Ākonga will learn about: - cutting, separating, bending, joining, melting, heating, mixing, shaping, forming etc - tool and machine safety - how to mahi tahi to trial techniques and test different materials. Mahi tahi means working together, which is important for the successful application of kaitiakitanga and for the undertaking of activities centred around the concept of kaitiakitanga in the workshop environment. - how to understand and extract information related to materials safety and datasheets. **The need or opportunity is introduced and explored** Through this exploration, ākonga will be supported to identify and research a person, whānau, or community they could connect with. Ākonga will then: - brainstorm people, whānau, or community who could benefit from an outcome centred around the theme of story/stories - research and empathise with the identified person, whānau, or community to determine the need or opportunity, and then explain why they chose them - identify and record the purpose of development, including key details from their research and basic contextual requirements. Ākonga will develop knowledge of: - materials (wood, plastics, metal, composites, organic etc) - joining different materials

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Significant Learning	Learning Activities and Assessment Opportunities
opportunities during the development and creation of Materials and Processing Technology outcomes • Manipulate, transform, combine, and form materials during the development and creation of Materials and Processing Technology outcomes	• tools, machines, and resources • workshop health and safety • cultural safety. Electronics concepts to cover: • input, process, and output • sensors and actuators • circuit design (putting components together to achieve a desired output) • measuring key circuit values (voltage, current, resistance, continuity). Electronics skills to cover: • using circuit design to model and test inputs and outputs • using sensors to manipulate transform systems using actuators • using programming in embedded systems to validate data and use the data for decision-making • learning about and applying electrical/electronics' safety. Ākonga will investigate materials in the development of the outcome. Tests could include: • breaking points • physical properties • aesthetic properties • durability • porosity (in terms of applying possible finishes) • load testing • bend testing • moisture or stain resistance. Ākonga will document the test results. Ākonga will document: • the results of manipulating, transforming, combining, or forming different materials • the collection and sharing of stakeholder feedback from more than one person at more than one point in the development • what they have learned about the properties of the materials through exploration • their reflection on the results of manipulating, transforming, combining, or forming different materials.

Significant Learning	Learning Activities and Assessment Opportunities
	Ākonga will practise decision-making based on the results of the manipulating, transforming, combining, or forming of different materials. This will inform the development of the outcome to address the need or opportunity. **The brief with specifications is refined** In the development and creation of the outcome to address the need or opportunity, ākonga will: • use stakeholder feedback to inform decision-making about refining the use of materials • reflect on how successfully the results of manipulating, transforming, combining, or forming of different materials have been used to select the most appropriate materials for the outcome based on properties • evaluate how well the outcome has met the need or opportunity for the person, whānau, or community • evaluate the outcome in the situation it has been designed for with the end user to determine whether it has met the requirements of the brief with specifications and is fit for purpose. Learning covered will provide opportunities to collect evidence towards AS 92013 (1.2) Experiment with different materials to develop a Materials and Processing Technology outcome.
• Understand how mātāpono Māori, tukanga, manaakitanga, kaitiakitanga, rangatiratanga, whanaungatanga, kotahitanga, wairuatanga, and auahatanga can be interlinked and woven together during the development and creation of Materials and Processing Technology outcomes • Understand how the Pacific values of alofa, vā, fonua, vaka, and kuleana are interlinked and woven together during the development and creation of Materials and Processing Technology outcomes • Take into consideration the cultural safety of themselves and others during the development and creation of Materials and Processing Technology outcomes • Understand the importance of the physical safety of themselves and others when using materials, tools, and equipment during the development and creation of Materials and Processing Technology outcomes for end users • Understand the importance of whanaungatanga through wānanga and talanoa to develop outcomes centred around the needs of a person, whānau, or community during the development and creation of Materials and Processing Technology outcomes • Understand how 'Ka mua, ka muri' influences reflective practice during the development and creation of Materials and Processing Technology outcomes • Explore the properties of materials during the development and creation of Materials and Processing Technology outcomes • Explore techniques to determine appropriate functional attributes during the development and creation of Materials and Processing Technology outcomes • Use planning, testing, and stakeholder feedback to inform decision-making during the development and creation of Materials and Processing Technology	## Identity and technology Duration — 7 weeks An overview of technological practice with the application of a design thinking tool. Ākonga will use technological practice to develop and create an outcome that reflects the theme of identity for a person, whānau, or community. **Exploration** Ākonga will: • explore how cultural values and identity can be linked through technological practice • identify possible needs or opportunities considering the influence of societal worldviews • conduct ongoing research to guide the development of the brief with specifications for a fit-for-purpose outcome, considering cultural safety for all stakeholders contributing to the outcome's development. **Design ideas development** Ākonga will explore: • initial ideas guided by the brief with specifications • ideas informed by relevant research and empathising with the end user • using drawing/3D model/CAD/simulations • circuits schematics • ideas that incorporate cultural elements, such as mātāpono Māori, tukanga, manaakitanga, and kaitiakitanga • whanaungatanga and how the design addresses the unique needs of individuals, whānau, or communities.

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Significant Learning	Learning Activities and Assessment Opportunities
outcomes • Use technological practice to solve real-world problems and realise opportunities during the development and creation of Materials and Processing Technology outcomes • Manipulate, transform, combine, and form materials during the development and creation of Materials and Processing Technology outcomes	**Design development** Ākonga will develop their design through: • modelling, mock-ups, drawings, or simulations • seeking and incorporating stakeholder feedback from more than one person, for example, peers, teachers, whānau members, professionals, experts, at more than one point to inform their technological practice • considering the importance of whanaungatanga through wānanga • applying technological knowledge in the development phase • using physical and functional attributes of input sensors and output actuators. **Design confirmation** Ākonga will confirm their design by: • presenting a working drawing (sketch or to scale), circuit diagram, or schematics with chosen component values • listing materials and/or components, quantity, and sizes required, and working voltage and current • considering whether it has the potential to address the brief with specifications, including alignment with cultural aspects outlined in the brief • engaging in wānanga to confirm the design, whilst appreciating the influence of wairuatanga (wānanga means a discussion, sharing of ideas, and reflection in accordance with tikanga and kaupapa that can lead to new knowledge and decision-making). **Technical application** Ākonga will apply the most appropriate techniques during the construction of their outcome, for example, separating, bending, joining, melting, heating, mixing, shaping, or forming of components. They will: • apply health and safety practices, considering both themselves and others, in the workshop (in relation to using tools, materials, components, machinery, and processes) • work collaboratively and cooperatively in the workshop • refine techniques and processes based on stakeholder feedback and on testing input sensors and output actuators • take aggregate readings to establish reliability from sensors • construct circuits • confirm circuit measurements by taking voltage and current readings. **Testing and evaluation** Ākonga will: • test and evaluate the outcome in the situation or modelled situation for design • evaluate how stakeholder feedback informed decisions about the development of the outcome, considering the influence of 'Ka mua, ka muri' on reflective practice • evaluate the outcome against the brief with specifications to determine fitness for purpose.

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Significant Learning	Learning Activities and Assessment Opportunities
	Learning covered will provide opportunities to collect evidence towards AS 92012 (1.1) Develop a Materials and Processing Technology outcome in an authentic context.
- Understand how mātāpono Māori, tukanga, manaakitanga, kaitiakitanga, rangatiratanga, whanaungatanga, kotahitanga, wairuatanga, and auahatanga can be interlinked and woven together during the development and creation of Materials and Processing Technology outcomes - Understand how the Pacific values of alofa, vā, fonua, vaka, and kuleana are interlinked and woven together during the development and creation of Materials and Processing Technology outcomes - Understand the importance of whanaungatanga through wānanga and talanoa to develop outcomes centred around the needs of a person, whānau, or community during the development and creation of Materials and Processing Technology outcomes - Apply sustainable practices during the development and creation of Materials and Processing Technology outcomes	## Sustainability and kaitiakitanga Duration — 7 weeks Ākonga will explore sustainability and consider the choice of materials through kaitiakitanga, understanding how this exploration considers culturally significant values and practices. They will learn about sustainable practice and what it looks like in a Hard Materials/Electronics context. This exploration of sustainable practices encompasses the selection of materials, efficient material usage, and responsible waste disposal, whilst respecting and incorporating cultural traditions and values. The teacher will guide ākonga to develop an understanding of sustainable practices, with the consideration of local knowledges. Ākonga will: - carry out ongoing research into potential outcomes, ideas, or opportunities throughout a design process - identify a need or opportunity for a person, whānau, or community to inspire the creation of a conceptual design. The development of the conceptual design can be done through: - drawing - modelling - mock-ups - digital renderings. Throughout the development of the conceptual design, ākonga will demonstrate their understanding of: - the properties of the materials they choose - cultural values associated with those materials - the economic use of materials, respecting both economic and cultural considerations - the disposal of materials, following current sustainable practices and demonstrating cultural respect. Ākonga will reflect on how well the design meets the requirements of the end user, aiming for a design and an outcome that respects both cultural practices and sustainable principles. Throughout the development of the design, students will explain how their design has been refined in response to sustainable practices, cultural requirements, and consideration of the need or opportunity. Ākonga will evaluate the decisions they made regarding the sustainable practices applied during the design process, and how they align with cultural values.

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Significant Learning	Learning Activities and Assessment Opportunities
	Learning covered will provide opportunities to collect evidence towards AS 92014 (1.3) Demonstrate understanding of sustainable practices in the development of a Materials and Processing Technology design.
- Understand how mātāpono Māori, tukanga, manaakitanga, kaitiakitanga, rangatiratanga, whanaungatanga, kotahitanga, wairuatanga, and auahatanga can be interlinked and woven together during the development and creation of Materials and Processing Technology outcomes - Understand how the Pacific values of alofa, vā, fonua, vaka, and kuleana are interlinked and woven together during the development and creation of Materials and Processing Technology outcomes - Take into consideration the cultural safety of themselves and others during the development and creation of Materials and Processing Technology outcomes - Understand the importance of the physical safety of themselves and others when using materials, tools, and equipment during the development and creation of Materials and Processing Technology outcomes for end users - Understand the importance of whanaungatanga through wānanga and talanoa to develop outcomes centred around the needs of a person, whānau, or community during the development and creation of Materials and Processing Technology outcomes - Understand the influence of Materials and Processing Technology outcomes on society - Understand how 'Ka mua, ka muri' influences reflective practice during the development and creation of Materials and Processing Technology outcomes	### Trialling techniques considering physical and cultural safety Duration — 6 weeks **Stage 1** Ākonga will investigate relevant techniques to trial, to determine the most appropriate for the development of an outcome, considering both cultural values and physical safety. Trials could be: - heating - machining - joining - staining - finishing. Ākonga will document the results. **Stage 2** From the trial results, and with the influence of cultural values, ākonga will make informed decisions about one or more techniques that could be used for the development of the outcome, whilst considering the cultural and physical safety of themselves and others. Techniques could be: - application - steaming - pressing - rolling - handcrafting - machine work. Ākonga will document decision-making from trialling and stakeholder feedback, justifying their decisions. **Stage 3** Ākonga will use the results of trialling and stakeholder feedback, considering cultural perspectives and insights from more than one source. Ākonga will use stakeholder feedback to: - enhance the development of the outcome - improve their outcome.

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Significant Learning	Learning Activities and Assessment Opportunities
	Purposeful stakeholder feedback may come from: • peers • teachers • whānau members • professionals • experts. The most relevant stakeholder will be consulted for each key decision. **Stage 4** Ākonga will evaluate how their decisions throughout trialling have benefitted the development of the outcome, whilst considering cultural values and physical safety. The evaluation should include: • reflecting on trialling results and stakeholder feedback to make decisions • comparing trialling results and stakeholder feedback to make informed decisions about the most appropriate techniques to use • justifying how trialling, stakeholder feedback, and the physical and functional attributes all connect to support making informed decisions that lead to a fit-for-purpose outcome. Learning covered will provide opportunities to collect evidence towards AS 92015 (1.4) Demonstrate understanding of techniques selected for a feasible Materials and Processing Technology outcome.

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Materials and Processing Technology NCEA NZC Level 1 Course Outline 3

Purpose: This example Course Outline (CO) has been provided to support teachers to understand how the new subject Learning Matrix and NCEA Achievement Standards might be used to create a year-long programme of learning.

Context: Textiles Technology

Significant Learning	Learning Activities and Assessment Opportunities
- Understand how mātāpono Māori, tukanga, manaakitanga, kaitiakitanga, rangatiratanga, whanaungatanga, kotahitanga, wairuatanga, and auahatanga can be interlinked and woven together during the development and creation of Materials and Processing Technology outcomes - Understand how the Pacific values of alofa, vā, fonua, vaka, and kuleana are interlinked and woven together during the development and creation of Materials and Processing Technology outcomes - Take into consideration the cultural safety of themselves and others during the development and creation of Materials and Processing Technology outcomes - Understand the importance of the physical safety of themselves and others when using materials, tools, and equipment during the development and creation of Materials and Processing Technology outcomes for end users - Understand the influence of worldviews and society during the development and creation of Materials and Processing Technology outcomes - Understand the influence of Materials and Processing Technology outcomes on society - Understand how 'Ka mua, ka muri' influences reflective practice during the development and creation of Materials and Processing Technology outcomes - Apply sustainable practices during the development and creation of Materials and Processing Technology outcomes - Use technological practice to solve real-world problems and realise opportunities during the development and creation of Materials and Processing Technology outcomes - Understand the importance of whanaungatanga through wānanga and talanoa to develop outcomes centred around the needs of a person, whānau, or community during the development and creation of Materials and Processing Technology outcomes - Manipulate, transform, combine, and form materials during the development and creation of Materials and Processing Technology outcomes	**Upcycling and sustainability** Duration — 16 weeks **Introduction to fibre and material properties** Engagement in practical lessons — health and safety requirements and practices to be embedded throughout teaching and learning programme. Look for teachable moments. (Refer to Safety in Technology Education). Using a brief provided by the teacher as a starting point, that they will later refine, ākonga will explore fibre and textile materials in the development of an outcome in an authentic context for a person, whānau member, or community. To start, ākonga will: - research the history of wool to identify how fibres have been manipulated in the past, up to the present day - research products that have been developed using wool and manufactured in Aotearoa New Zealand to gain understanding and inspiration for their project - incorporate wool products into a range of different materials through transformation or manipulation. Materials could include fibres, woven, felted, or knit fabrics, or materials that can be repurposed. - learn about upcycling and why it is important - learn about the growing societal awareness of sustainability and how it impacts on the life cycle of garments and the durability of materials - consider sustainability in terms of repurposing, reducing, and reusing materials, as well as transport (eg being so far away from the major manufacturing countries). As ākonga carry out this research, they will begin to consider the lifecycle of products, waste management, and cultural practices. Fibre and fabric properties and attributes will be identified. **Exploration of manaakitanga, whanaungatanga, and kaitiakitanga as lenses that can be used when starting to think about the creation of the upcycled sustainable outcome for a person, whānau member, or community** Encourage ākonga to recognise that using creative and critical thinking in collaboration with others can lead to developing new and innovative solutions. Ākonga will: - experiment with different materials

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Significant Learning	Learning Activities and Assessment Opportunities
• Explore the properties of materials during the development and creation of Materials and Processing Technology outcomes • Explore techniques to determine appropriate functional attributes during the development and creation of Materials and Processing Technology outcomes • Use planning, testing, and stakeholder feedback to inform decision-making during the development and creation of Materials and Processing Technology outcomes	• investigate how methods for manipulating, transforming, combining, or forming materials have changed over time • test ideas and potential solutions with peers and within the local community where applicable. Ideas could include creative or practical solutions for garments. • use resources that could inspire creative thinking • work collaboratively and engage in kōrero, wānanga, or talanoa to communicate their own and others' perspectives • reflect on experimentation by analysing what techniques have been used to manipulate and transform materials effectively and successfully. An evaluation tool such as PMI could be used. PMI (Plus, Minus and Interesting) is a critical thinking tool used to generate discussion around the positives, negatives, and interesting ideas associated with a particular idea or concept. Ākonga will use stakeholder feedback to inform development. While doing so, they will: • develop understanding of copyright and licensing, and how Creative Commons license affects what happens when motifs and designs from other professionals are used, for example, Aotearoa New Zealand fern on rugby jerseys • explore ethical issues related to the potential outcome such as appropriateness of specific resources. For example, is it appropriate to use wool if you're vegan? [Vegan yarn and plant fibres (the fake sheep)](#) • explore cultural appropriation versus appreciation, and consider if it will have any impact on the motifs and designs that could be used in development • identify and evaluate the perspectives of others and any relevant social, cultural, and ethical considerations (including mātauranga Māori) to ensure outcomes are fit for purpose • research topical news items, such as the Aotearoa New Zealand boat made from wool and plastic. Ākonga will use a design process to develop and document potential wool fibre outcomes. They will: • generate concepts that address the use of wool from Aotearoa New Zealand • use research into the chosen context to inform concepts and product needs or opportunities • use stakeholder feedback to select a concept to develop and apply sustainable practices • develop the concept using stakeholder feedback and user perspectives on cultural diversities • apply design principles to improve the design cycle • identify how the design cycle is informed by testing ideas • justify how the proposed outcome addresses the purpose and meets the requirements of the brief • explain how te ao Māori principles (manaakitanga, whanaungatanga, kaitiakitanga) were respectfully considered in the development of the design. **Ākonga will apply knowledge of sustainability and of manipulating, transforming, combining, or forming materials to make an outcome for a person, whānau, or community** • Results of manipulating, transforming, combining, or forming materials will inform the development for the need or opportunity. • Specifications informed by manipulating, transforming, combining, or forming materials should be developed to meet the need or opportunity.

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Significant Learning	Learning Activities and Assessment Opportunities
	In the creation of the outcome to address the need or opportunity, ākonga will: • use stakeholder feedback to inform decisions about refining the use of materials • reflect on the success of the outcome • evaluate how successfully the results of manipulating, transforming, combining, or forming have been used to select the most appropriate properties and attributes for the outcome • evaluate how well the outcome has met the need or opportunity. They will reflect on how well the design meets the requirements of the end user, which improves the outcome. Throughout the development of a conceptual design, the student will explain how their design has been refined in response to sustainable practices and the requirements of the end user. Ākonga will evaluate the decisions they made about the sustainable practices applied during the development of the design *Learning covered will provide opportunities to collect evidence towards AS 92013 (1.2) Experiment with different materials to develop a Materials and Processing Technology outcome AND AS 92014 (1.3) Demonstrate understanding of sustainable practices in the development of a Materials and Processing Technology design.*
• Understand how mātāpono Māori, tukanga, manaakitanga, kaitiakitanga, rangatiratanga, whanaungatanga, kotahitanga, wairuatanga, and auahatanga can be interlinked and woven together during the development and creation of Materials and Processing Technology outcomes • Understand how the Pacific values of alofa, vā, fonua, vaka, and kuleana are interlinked and woven together during the development and creation of Materials and Processing Technology outcomes • Understand the importance of the physical safety of themselves and others when using materials, tools, and equipment during the development and creation of Materials and Processing Technology outcomes for end users • Understand how 'Ka mua, ka muri' influences reflective practice during the development and creation of Materials and Processing Technology outcomes • Manipulate, transform, combine, and form materials during the development and creation of Materials and Processing Technology outcomes • Apply sustainable practices during the development and creation of Materials and Processing Technology outcomes • Use planning, testing, and stakeholder feedback to inform decision-making during the development and creation of Materials and Processing Technology outcomes • Use technological practice to solve real-world problems and realise opportunities during the development and creation of Materials and Processing Technology outcomes • Understand the importance of whanaungatanga through wānanga and talanoa to	**Identity through sustainable design and upcycling** Duration — 16 weeks **Outcome development focusing on Identity** Ākonga will build skills and knowledge using appropriate equipment and resources to create an outcome for a person, whānau member, or community. Using a brief provided by the teacher, that they will later refine, ākonga will design and develop an outcome that reflects the theme of 'Identity', applying learning about manipulating, transforming, combining, or forming materials from the first project. • Ākonga will research and reflect chosen culture/s, identity, and environments and learn to communicate specifications that allow an outcome to be evaluated as fit for purpose within the context of Identity. • The focus is to develop critical thinking through making decisions about resource choices, availability, and opportunities. They will: • use a design process to develop their outcomes that informs the final outcome by: considering usability and design principles in their development of an outcome in an authentic context considering te ao Māori concepts when developing their outcome. • explore materials to determine their properties • trial a range of basic construction techniques to determine the most appropriate (physical and functional attributes) • consider usability and design principles in the development of the outcome • test their ideas with end users and use stakeholder feedback to improve them • record each stage using planning and milestones

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Significant Learning	Learning Activities and Assessment Opportunities
develop outcomes centred around the needs of a person, whānau, or community during the development and creation of Materials and Processing Technology outcomes	- create the outcome using safe classroom practices and cooperation with peers - resolve practical issues and continued refinement of the outcome as it is created - justify the specifications in terms of the wider stakeholder and end user considerations by using evidence from conversations, videos, and photos of the prototype used in the intended environment - complete and test the outcome for fitness for purpose in the situation (or modelled situation) it has been developed for. Learning covered will provide opportunities to collect evidence towards AS 92012 (1.1) Develop a Materials and Processing Technology outcome in an authentic context AND 92015 (1.4) Demonstrate understanding of techniques selected for a feasible Materials and Processing Technology outcome.

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