# **Materials and Processing Technology Level 1 Course Outline 3**

# Guide to aid teacher planning only - designed to be printed or viewed in A3, Landscape.

## Purpose

This example Course Outline has been produced to help teachers and schools understand the new NCEA Learning and Assessment matrices and could be used to create a year-long programme of learning. It will give teachers ideas of how the new standards might work to assess the curriculum at a particular level.

## Context

## Textiles, Technology

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| **Significant Learning** | **Learning activities and assessment opportunities**Throughout the year assessment for learning happens often. Evidence may also be collected for summative assessment. | **Duration** Total of 32 weeks |
| * understand how materials and processing practice impacts on people by considering the following mātauranga Māori principles: kotahitanga, whanaungatanga, manaakitanga, kaitiakitanga, and tikanga
* learn to be respectful and open-minded whilst considering the cultural safety of themselves and others
* learn about and understand the safe use of chosen materials, tools, and equipment whilst developing an outcome
* consider the impact of the outcome on the end user(s).
* explore and apply world views to the development and creation of outcomes
* learn about the impact of and on society of outcome development
* explore tikanga Māori and Pacific materials and processing techniques as a foundation for outcome development
* understand that tikanga influences outcome development
* learn about a range of traditional and contemporary materials and techniques and how they relate to each other
* understand the importance of manaaki whenua (caring for the land), manaaki tangata (caring for the people), and economic factors in sustainable design for generations now and into the future
* develop auahatanga (innovation) skills through technological practice
* develop and apply practical skills to solve authentic problems or realise opportunities
* understand that outcomes are designed and developed to address a need or opportunity for a person, whānau, or community
* develop communication skills that support working with others
 | Upcycling and Sustainability**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’ – TKI) Using a given brief as a starting point, students will explore fiber and textiles materials in the development of an outcome in an authentic context for a person, whānau member, or community group. To start, students 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
* transform and manipulate a range of different materials e.g.  weaving/felting/knitting/repurposing etc, using wool products and combining with other fibres and materials
* learn about upcycling and why is it important
* learn about the growing societal awareness of sustainability and how it impacts on the life cycle of the garments and the durability of the materials
* consider sustainability in terms of repurposing, reducing, and reusing materials as well as being so far away from huge manufacturing countries.

As students carry out this research, they will begin to consider the lifecycle of products, waste management, and cultural practices. Fibre and fabric properties and characteristics will be identified.  **Exploration of manaakitanga, whanaungatanga and kaitiakitanga as lenses that can be used when starting to think about the creation of an outcome for a person, whanau, or community member.**   * Encourage students to recognise that using creative and critical thinking in collaboration with others can lead to developing new and innovative solutions.
* Explore a range of diverse materials.
* Explore how different transformation and manipulation techniques 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 korero and wānanga to communicate their own and others’ perspectives.
* Reflect on the experimentation by analysing what techniques have been used to manipulate and transform materials effectively and successfully. A PMI tool could be used.

**Use feedback to inform development considering the following.** * 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, NZ fern on rugby jersey.
* Explore ethical issues related to the potential outcome - such as appropriateness of specific resources eg is it appropriate to use wool if you're vegan? <https://thefakesheep.wordpress.com/vegan-yarn/>
* 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 NZ boat made from wool and plastic).

**Students will use the design process to develop and document potential wool fibre outcomes.** * Generate a range of concepts that address the use of wool from Aotearoa.
* Use research into the chosen context to inform concepts and product needs and opportunities.
* Use feedback to select a concept to develop using sustainable factors.
* Develop the concept using feedback and user perspectives on cultural diversities.
* Apply design principles to improve the design cycle.
* Identify how the design cycle is informed by testing and trialling ideas.
* Explain/justify that the proposed outcome addresses the purpose and meets the requirements of the brief.
* Explain how they considered te ao Māori concepts (manaakitanga, whanaungatanga, kaitiakitanga) in the development of their design.

**Students will apply knowledge of sustainability, transformation, and manipulation to make an outcome for a person, whānau, or community group.** * Results of materials manipulation which will inform the development of the need/ opportunity.
* Specifications can be drawn to meet the need/opportunity informed by the materials manipulation.

**In the creation of the outcome to address the need/opportunity, students will:*** use feedback to inform decisions about modifications
* reflect on the success of the outcome
* reflect on how successfully manipulation and transformation has been used within the outcome
* evaluate how well the final outcome has met the need or opportunity.

This topic may contribute to the assessment of **AS 92013 Transform, manipulate, or combine different materials in the development of a Materials and Processing Technology outcome**This topic may contribute towards the assessment of **AS 92014 Apply sustainable practices to a Materials and Processing Technology design** | 14–16 weeks  |
| * understand how materials and processing practice impacts on people by considering the following mātauranga Māori principles: kotahitanga, whanaungatanga, manaakitanga, kaitiakitanga, and tikanga
* learn about and understand the safe use of chosen materials, tools, and equipment whilst developing an outcome
* understand that tikanga influences outcome development
* learn about a range of traditional and contemporary materials and techniques and how they relate to each other
* understand the importance of materials and process selection for performance, aesthetics, and sustainability
* understand, use, rangahau (research), and apply design thinking principles
* explore planning, testing, and trialling whilst developing an outcome
* develop and apply practical skills to solve authentic problems or realise opportunities
* understand that outcomes are designed and developed to address a need or opportunity for a person, whānau, or community
* use evaluation to determine an outcome’s fitness for purpose
* develop communication skills that support working with others
 | Identity through sustainable design and upcycling **Outcome development – Focusing on Identity – Students will build skills and knowledge using appropriate equipment and resources to create an outcome for a person, whanau member or community group** Using a given brief, learners will design and develop an outcome that reflects the theme of ‘Identity’, applying learning about the manipulation and transformation of materials in the first project.   * 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.
* Use a design process to develop their outcomes that informs the final product by:
	+ considering usability and design principles in their development of an authentic outcome
	+ considering te ao Māori concepts when developing their product.
* Students test a range of materials to determine suitability.
* Students test a range of basic construction techniques in an appropriate order to complete the construction steps through the exploration of appropriate resources.
* Consider usability and design principles in the development.
* Test their ideas with end users and use feedback to improve it.
* Record each stage using planning and milestones.
* Create the outcome using safe classroom practices and co-operation 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 physical intended environment.
* Complete and test the final outcome for fitness for purpose in the situation (or modelled situation).

This project may contribute to the assessment of **AS 92012 Develop a Materials and Processing Technology outcome for an authentic context** This project may contribute to the assessment of **AS 92015 Select and test materials and techniques for a feasible Materials and Processing Technology outcome** | 14–16 weeks Includes a 2–3 week time period to carry out CAA |

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