Y11 MATERIALS TECHNOLOGY
2011

Queen Margaret College

All Materials Technology courses are developed around the three learning strands of the New Zealand Technology Curriculum: Technological Knowledge and Understanding, Technological Practice; and Nature of Technology.

It is recommended that students have studied Materials Technology in Year 10.

Course Description:

Students will have the opportunity to explore a variety of materials throughout the year. Students will work on two major units of work that will take approximately 16 weeks per topic to complete. Each unit of work will require completion of investigation research, design, development work, written tasks and the construction of a practical solution. It is recommended that one of the major units of work should be developed for a client, not the student. The achievement standards are imbedded across the two major units of work.

Students will be involved in a variety of activities with given scenarios to 'problem solve', which may result in the development of a model, prototype, or final product outcome.

Course Duration:

- Materials Technology is a year-long practical based course.
- Each Materials Technology class has up to 9 lesson hours per 10 day timetable.

Bags of Difference Topic:

- Term 1-2

Influential Designer garment Topic:

- Term 2-3-4

Achievement/Learning Objectives:

BRIEF DEVELOPMENT	*Students will:*
	Justify the nature of an intended outcome in relation to the need or opportunity and justify specifications in terms of key stakeholder feedback and wider community consideration
OUTCOME DEVELOPMENT AND EVALUATION	*Students will:*
	Critically analyse their own and others' outcomes to inform the development of ideas for feasible outcomes (conceptual design and prototype). Undertake ongoing experimentation and functional modelling, taking account of stakeholder feedback and trialling in the physical and social environments. Use the information gained to select, justify, and develop a final outcome. Evaluate this outcome's fitness for purpose against the brief and justify the evaluation using feedback from stakeholders
TECHNOLOGICAL PRODUCTS	*Students will:*
	Understand how materials are formed, manipulated, and transformed in different ways, depending on their properties, and understand the role of material evaluation in determining suitability for use in product development.
CHARACTERISTICS OF TECHNOLOGICAL OUTCOMES	*Students will:*
	Understand that some Technological Outcomes can be perceived as both product and system. Understand how these outcomes impact on other outcomes and practices and on people's views of themselves and possible futures.
VISUAL COMMUNICATION	*Students will:*
	Demonstrate understanding of and skills in fundamental visual communication techniques
CONSTRUCT A TEXTILES PRODUCT	*Students will:*
	Implement basic procedures to make a textiles product

Topic One:
'Bags of Difference'

Students will develop and construct a bag / storage item for a specific client's needs.
Students will have the opportunity to work with a client to develop a prototype bag outcome that meets the client needs. They will learn how to create their own patterns, how to develop a construction sequence, through testing and practical activities develop confidence and competence with practical equipment, and investigate and apply practical techniques and processes related to bag construction. Students will be taught a variety of freehand drawing techniques and through practical application develop their design skills. They will develop understandings about the importance of ongoing client and stakeholder consultation, and the importance of analysing and selecting appropriate materials, techniques, and processes for bag development and construction.
This is the major topic of the two units of work. Several assessment standards are imbedded into this unit of work. Assessments are spaced out over the topic and will occur at appropriate times.
The conceptual design work from this unit of work is submitted for external assessment –where the student's design ability and freehand sketching skills and annotation techniques will be assessed.

Topic Two:
'Influential Designer Garment'

Students will develop and construct a garment suitable for a specific occasion, for a specific client.
This assessment requires students to look at the work of a client-selected Fashion Designer and use elements of the chosen designer's design style, techniques, and 'look' in the garment produced. The influence of the fashion designer must be obvious in the final outcome and be explained and justified by the student.
Students will revise skills in interpreting commercial patterns and pattern symbols / language, modify an existing pattern or create their own in the development of an original garment design to meet the client specifications. Fabric testing, sample making and following construction sequences are a focus of this unit.
Construction techniques will be taught as required for the individual student pattern requirements.
Several assessment standards are imbedded into this unit of work. Assessments are spaced out over the topic and will occur at appropriate times.
The conceptual design work from this unit of work is submitted for external assessment –where the student's design ability and freehand sketching skills and annotation techniques will be assessed.

Bags of Difference Topic	**Y11 Materials Technology - Unit Planner 2011** **Term 1-2**

Unit Objectives / Learning outcomes – students will:

- Select and use appropriate resources through informed testing, trialing and evaluation.
- Develop an understanding of the important of functional modeling (mock-ups, materials selection, testing, techniques, sketching……)
- Develop a self-designed bag mock-up and final pattern. Become competent in handling patternmaking equipment.
- Develop competent skills in freehand sketching and rendering.
- Develop a brief and specifications for a specific client.
- Utilize a range of planning techniques to help manage time and resources.
- Examine existing solutions and analyse these for function, improvement, feature identification.
- Undertake a range of self-reflection practices.
- Develop an understanding of ergonomics and apply this to own outcome development.
- Develop practical skills competency - Y11 practical skills / basic procedures and developing skills in construction techniques and processes.
- Create own construction sequence in discussion with teacher.
- Produce a self-constructed final outcome.
- Implement the outcome in consultation with the client and provide photographic evidence of testing.
- Carry out a comprehensive evaluation process.

Assessment Standards

- AS91047 (1.4) V1 – Undertake development to make a prototype to address a brief – 6 credits Level 1: Internal
- AS91058 (1.21) V1 – Implement basic procedures using textile material to make a specified product – 6 credits Level 1: Internal
- AS91063 (1.30) V1 – Produce freehand sketches that communicate design ideas – 3 credits Level 1: External

Competencies	Values
Thinking • *Critical and reflective, decision making with justification, originality and creativity in design, problem solving.* **Using language, symbols and texts** • *Following pattern instructions and symbols.* **Managing self** • *Time management, resource preparation and purchase, meeting deadlines and milestones, following instructions.* **Relating to others** • *Sharing equipment, consultation with client and stakeholders.* **Participating and contributing** • *Sharing ideas and progress, participation in class testing and sample making, active work in class and practical workshops.*	**Excellence** – by aiming high and by persevering in the face of difficulties. • *Producing quality practical outcomes. Persevering with pattern and construction complexities.* **Innovation, inquiry and curiosity** – by thinking critically, creatively and reflectively. • *Producing original design concepts, weekly reflection practice.* **Diversity** – as found in our different cultures, languages, and heritages. • *Meeting the brief specifications and needs of a client.* **Equity** – through fairness and social justice. • *Respecting others – ideas, designs, skills, equipment, physical space.* **Community and participation** – for the common good. • *Participates in all set activities.* **Integrity** – which involves being honest, responsible, accountable and acting ethically. • *Meets the set budget, adheres to copyright law, originality in design.*

Technology Strands – Achievement Objectives	Assessment Opportunities	Subject Links
Level 4-**5**-6 **Technological Practice – *Outcome development and Evaluation*** ***Students will be able to:*** • *Generate design ideas that are informed by research and analysis of existing outcomes.* • *Undertake functional modeling to develop design ideas into a conceptual design that addresses the specifications.* • *Evaluate suitability of materials/components, based on their performance properties, to select those appropriate for use in the production of a feasible outcome.* • *Produce and trial a prototype of the outcome.* • *Evaluate the fitness for purpose of the final outcome against the specifications.* **Technological Knowledge – *Technological Products*** ***Students will be able to:*** • *Explain the link between specifications of a product and the selection of suitable materials for its construction.* **Nature of Technology – Characteristics of Technological Outcomes** ***Students will be able to:*** • *Evaluate past technological outcomes in the light of experiences subsequent to their development and/or contemporary understandings (Topic focus - 'Ergonomics').*	**Self:** • Weekly reflection • Final evaluation **Formative:** • Mock-ups • Brief development • Design concepts • Research **Summative:** • Completed visual diary • Completed outcome • Final design sketches • Final evaluation	• Art • Graphics • Mathematics • Science **Community Links** • Ergonomics expert – link to 'The futures channel' website – Designing the Backpack. **Resources** • Patternmaking equipment • Teacher topic ring-binder • Sewing equipment • Powerpoint – Freehand sketching / and / Analysing Bags • DVD – Ergonomics • Existing bags

LEARNING ACTIVITIES

Learning Activities overview:

Initial Research Activities:

- Research – Bags, uses, features, function. What is important in a successful bag outcome?
- Examine existing solutions.
- Opinions from others.
- www.thefutureschannel.com 'Designing the backpack'.
- Ergonomics – Watch DVD. Identify ergonomic factors for designing a bag.
- Materials examination. Identifying appropriate fabric properties and environmental factors for designing a bag.

Brief Development Activities:

- Context and client brainstorming.
- Client and stakeholder interviews.
- Define client functional use attributes / specifications.
- Identify environmental considerations for bag intended use.
- Investigate and select materials / confirm with client fabric properties for functional intended use.
- Initial brief.
- Revise brief throughout development of bag.

Freehand Sketching Introduction Activities:

- Teach students basic three dimensional techniques: eg: Oblique, isometric, planometric, perspective, proportional, shading, tonal rendering.
- Practice freehand drawing sketches and using media for rendering.
- Apply techniques to conceptual design work for bag.

Prototype and Functional Modeling Development Activities:

- Concept sketches, development sketches. Select design. Client approval.
- Teach patternmaking techniques.
- Pattern development, mock-ups, client ergonomics testing, final pattern.
- Trialling and selecting materials / techniques: eg: Teacher demonstration – then student testing on own materials: Presser feet, machine settings, needle size, stitch length, Dacron, interfacing, strengthening techniques and layers, plastic protection layers, iron temperature, embellishment samples. Test results and conclusions. Apply conclusions to bag development construction.
- Teach zip pocket technique. Students make sample.
- Plan own construction sequence – discuss with teacher.
- Construction of bag.
- Client and stakeholder consultation throughout whole process.

Functional Testing of Prototype Activities:

- Test bag on client in intended environment.
- Include stakeholder consultation.
- Provide evidence photos.
- Complete final evaluation against brief specifications. Note potential areas for improvement. Refer to client and stakeholder comments on bag functionality, areas for improvement.

Influential Designer Garment

Y11 Materials Technology - Unit Planner 2011
Term 3-4

Unit Objectives / Learning outcomes – students will:

- Use design ideas informed through investigation of – an influential designer / and / existing outcomes analysis to develop a garment for a self-identified client.
- Consult with a selected client and identified relevant stakeholders throughout the whole project.
- Select and use resources through informed testing, trialing and evaluation.
- Create own pattern or adapt / modify an existing commercial pattern to meet client brief design specifications.
- Continue to develop skills in freehand sketching.
- Develop a brief and specifications for a specific client.
- Utilize a range of planning techniques to help manage time and resources.
- Undertake a range of self-reflection practices.
- Develop practical skills competency - Y11 practical skills / basic procedures and developing skills in construction techniques and processes.
- Carry out various functional modeling processes as appropriate to the conceptual outcome.
- Follow a pattern construction sequence or adapt or create own sequence in discussion with teacher.
- Produce a self-constructed final conceptual outcome.
- Evaluate the outcome in consultation with the client and provide photographic evidence.
- Carry out a comprehensive evaluation process.

Assessment Standards

- AS91046 (1.3) V1 – Use design ideas to produce a conceptual design for an outcome to address a brief – 6 credits Level 1: Internal
- AS91063 (1.30) V1 – Produce freehand sketches that communicate design ideas – 3 credits Level 1: External

Competencies	Values
Thinking • *Critical and reflective, decision making with justification, originality and creativity in design, problem solving.* **Using language, symbols and texts** • *Following commercial pattern instructions and symbols.* **Managing self** • *Time management, resource preparation and purchase, meeting deadlines and milestones, following instructions.* **Relating to others** • *Sharing equipment, consultation with client and stakeholders.* **Participating and contributing** • *Sharing ideas and progress, participation in class testing and sample making, active work in class and practical workshops.*	**Excellence** – by aiming high and by persevering in the face of difficulties. • *Producing quality practical outcomes. Persevering with pattern and construction complexities.* **Innovation, inquiry and curiosity** – by thinking critically, creatively and reflectively. • *Producing original design concepts, weekly reflection practice.* **Diversity** – as found in our different cultures, languages, and heritages. • *Meeting the brief specifications and needs of a client. Describing connections with an influential designer.* **Equity** – through fairness and social justice. • *Respecting others – ideas, designs, skills, equipment, physical space.* **Community and participation** – for the common good. • *Participates in all set activities.* **Integrity** – which involves being honest, responsible, accountable and acting ethically. • *Meets the set budget, adheres to copyright law, originality in design.*

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Level 4-**5**-6 **Technological Practice – *Outcome development and Evaluation*** ***Students will be able to:*** • *Generate design ideas that are informed by research and analysis of existing outcomes.* • *Undertake functional modeling to develop design ideas into a conceptual design that addresses the specifications.* • *Evaluate suitability of materials/components, based on their performance properties, to select those appropriate for use in the production of a feasible outcome.* • *Produce and trial a prototype of the outcome.* • *Evaluate the fitness for purpose of the final outcome against the specifications.* **Technological Practice – *Brief development*** ***Students will be able to:*** • *Communicate specifications that allow an outcome to be evaluated as fit for purpose.* **Technological Knowledge – *Technological Modelling*** ***Students will be able to:*** • *Explain how evidence gained from functional modeling was used to justify design decisions.* • *Explain how evidence gained from prototyping was used to justify outcome evaluation as fit for purpose or in need of further development.*	**Self:** • Weekly reflection • Final evaluation **Formative:** • Mock-ups – functional modelling • Brief development • Design concepts • Research **Summative:** • Completed visual diary • Completed outcome • Final design sketches • Final evaluation	• Art • Graphics • Mathematics • Science • History **Community Links** • Influential designer – potential visit to a local designer to look at their practice. **Resources** • Pattern-making equipment • Teacher topic ring-binder • Sewing equipment • Display images – fashion illustration and looking at elements of design in 'influential designer' work. • List of influential fashion designers and helpful websites, book resources for students to access. • Commercial patterns and handouts on pattern symbols

LEARNING ACTIVITIES

Learning Activities overview:

Initial Research Activities:

- Class context / setting discussion. Suitable garments, skills complexity, time management for second half year topic, topic constraints.
- Elements of design. Looking at influential designers – how to identify design features / elements and use these ideas in your own work. Teacher resources – fashion designer sketches / connecting images from magazines etc.
- Examine work from previous year students.

Brief Development Activities:

- Context and client brainstorming.
- Client and stakeholder interviews.
- Define client functional use attributes / specifications / identified preferred influential designer.
- Identify environmental considerations for garment intended use.
- Investigate and select materials / confirm with client fabric properties for functional intended use.
- Examine existing solutions of garment type client requires. Analyse.
- Investigate Influential designer. Examine existing solutions. Identify elements of design. Analyse, discuss and select design elements with client.
- Initial brief.
- Revise brief throughout development of garment.

Freehand Sketching Activities:

- Teach students how to create own tracing figures.
- Sequential views / angles to tell a story.
- Practice freehand drawing fashion sketches and using media for rendering.
- Apply techniques to conceptual design work for garment.

Conceptual design and Functional Modeling Development Activities:

- Concept sketches, development sketches. Include influential designer design element. Select design. Client approval.
- Review commercial patterns. Identifying sizes, pattern pieces, construction information….
- Pattern development – adapting a commercial pattern or making own pattern.
- Produce required mock-ups / part or whole as required in cheap calico / like materials.
- Trialling and selecting materials / techniques: eg: Teacher demonstration – then student testing on own materials: Presser feet, machine settings, needle size, stitch length, interfacing, iron temperature, embellishment samples, washing tests, abrasion resistance, wrinkle resistance, dimensional stability……. Test results and conclusions. Apply conclusions to produce a care label for construction and maintenance of garment.
- Teach zip / buttonhole technique. Students make sample.
- Follow commercial pattern instructions / modify sequence / or make own sequence in discussion with teacher.
- Construction of garment.
- Client and stakeholder consultation throughout whole process.

Functional Testing of Conceptual Design Activities:

- Student carries out fittings throughout development and construction of garment. Client and stakeholders are consulted throughout development.
- Client approves selected pattern modifications, self-developed embellishments or garment features (samples, mock-ups…)
- Client is shown care label.
- Test garment on client in intended (like / similar / or actual) environment.
- Include stakeholder consultation.
- Provide evidence photos.
- Complete final evaluation against brief specifications. Note potential areas for improvement. Refer to client and stakeholder comments on garment functionality, areas for improvement.