3D Printing
Assessment Task

Length: Various

Marks / value:  
9D&T - 25%
10D&T - 15%

Date due:
Design process folio - Term 1 Week 10
3D printed project - Term 1 Week 10

Purpose of this assignment
Students will follow the design process to design and develop a 3D printed design project. This unit will also focus on the development of graphical communication skills and collaboration skills.

Outcomes being assessed
5.1.1 Analyses and applies a range of design concepts and processes.
5.1.2 Applies and justifies an appropriate process of design when developing design ideas and solutions.
5.4.1 Develops and evaluates innovative, enterprising and creative design ideas and solutions.
5.5.1 Uses appropriate techniques when communicating design ideas and solutions to a range of audiences.
5.6.1 Selects and applies management strategies when developing design solutions.
5.6.2 Applies risk management practices and works safely in developing quality design solutions.
5.6.3 Selects and uses a range of technologies competently in the development and management of quality design solutions.

Task:
In collaborative groups (Year 9 to work on their own), design and produce a 3D printed ear phone organiser. You will need to submit:
- Design process folio (every student must complete)
- Ear phone organiser

Special Instructions:
- This project will focus on the design process. It is OK to try things that may not work.
- The design process folio does not need to be word processed. It is your choice.
## MARKING GUIDELINES

<table>
<thead>
<tr>
<th>Range</th>
<th>A student in this range</th>
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| **Advanced**               | - Folio extensively addresses all sections  
- Extensive concept development completed  
- Detailed CAD plan completed  
- Highly aesthetic and functional project constructed |
| **Highly Competent**       | - Folio comprehensively addresses set sections  
- Comprehensive concept development completed  
- Sound CAD plan completed  
- Good aesthetic and functional qualities in the project |
| **Competent**              | - Folio satisfactorily addresses most sections  
- Satisfactory concept development  
- Satisfactory CAD plan completed  
- An aesthetic and functional project completed |
| **Developing**             | - Folio addresses some sections  
- Limited concept development completed  
- Limited CAD plan completed  
- Project has some aesthetics and functionality |
| **Experiencing difficulty**| - Folio addresses few of the sections  
- Little to no concept development  
- Little to no CAD plan completed  
- Project is incomplete with little aesthetics or functionality |
Identification and exploration of the problem

Brainstorm the key requirements and considerations for this project. Use a mind map to record your thoughts in your design process folio.

Research

Please use the following points as sub-headings for the research section of your folio:

- What is a 3D printer and how do they work?
- Types of plastics and their properties.
- Size of print bed or maximum dimensions for the printer?
- What are the size and dimensions of the ear buds? (You may need to measure accurately using the vernier calipers).
- Existing products - see the specific instructions for this section below

Existing Products: Collect and annotate images of products that will help in the development of your project. Identify features that could be incorporated into your design or have given you ideas for your project. A minimum of 6 images is required.

Design criteria

How will you measure the success of your project? You may wish to consider factors such as function and aesthetics.

Design concept sketches

1. On blank A4 paper, produce at least 5 different concept sketches.
2. Each sketch should fill the majority of the page.
3. Each concept should be annotated and labelled.
4. Each sketch should use the drawing techniques demonstrated in class.

Presentation sketch

Using the drawing techniques demonstrated in class, produce a coloured presentation sketch of your group’s final design. This sketch could be drawn on A3 paper and should include shading, shadows, and highlights where appropriate.

CAD 3D model

Use Sketchup to construct a scaled 3D rendered model of your project. When complete, this will need to be exported as an ‘stl’ file ready for 3D printing.
Project evaluation

Your evaluation may answer questions such as:

1. Did your project meet the requirements? Explain why or why not.
2. Discuss any problems or difficulties that were encountered during the development of your project.
3. How well did your team work together?
4. What are the best features of your project?
5. How could your project be improved?
6. What skills have you learnt or improved during this project?

How could this project be improved for the next year group?
### 3D Printing

#### Mark Sheet

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<td>- Identification and exploration of the problem</td>
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<td>- Research</td>
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<td>- Design criteria</td>
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<td>- Concept sketches</td>
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<td>- Project evaluation</td>
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<td>- Folio presentation</td>
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<td>- AD 3D model</td>
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<td>- Worked collaboratively during the project development</td>
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<td>- Function</td>
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**Additional comments**