

# LIFE SIZE

DYMO EMBOSSER

MYRA WING SIZE LI  
S3532773  
GRAP1050  
PROJECT #3



**ORIGINAL PRODUCT**



## **DYMO EMBOSSE**

- ERGONOMIC CURVED FORM
- DESIGNED FOR EASY HAND GRIP
- ROTATIONAL LABELLING WHEEL
- DESIGNED FOR DISASSEMBLY
- MADE OF DURABLE ABS PLASTICS



# DYMO EMBOSSER

RECREATED USING REVERSE ENGINEERING

## SKILLS LEARNED

- SURFACING
- WORKING IN ASSEMBLY TO ELIMINATE INTERFERENCES OF COMPONENTS
- CREATING MULTIPLE BODIES IN ONE PART
- REVERSE ENGINEERING
- RENDERING WITH PHOTOVIEW 360
- ADDING DECAL FOR LOGO & PRINTED TEXT
- SEARCHING FOR 3D PRINTING SERVICES
- PROBLEM SOLVING SKILLS
- EXPORTING APPROPRIATE FILES FOR 3D PRINTING AND SUBMISSION

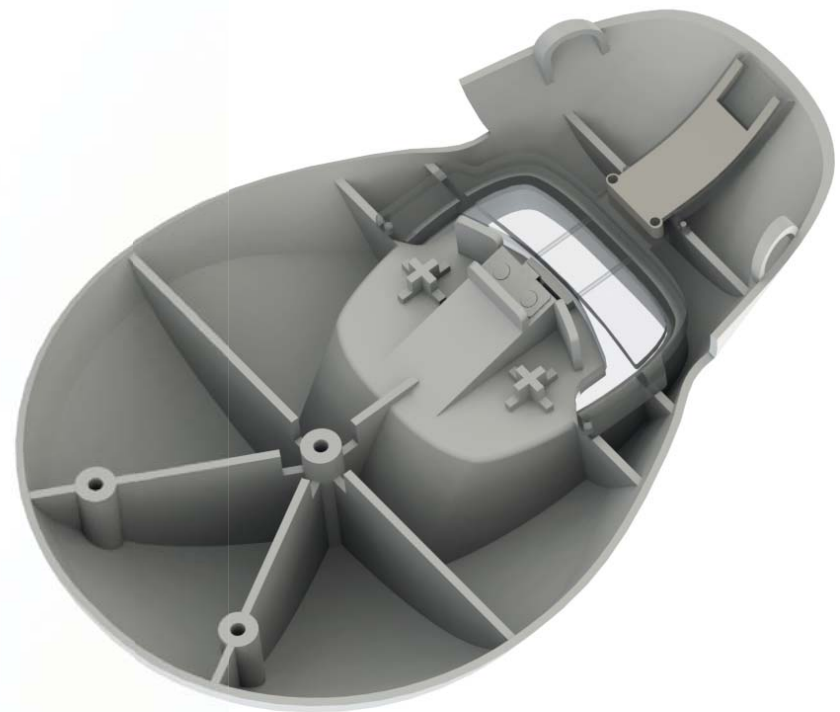


# EXPLODED VIEW





## DT01 - UPPER CASE



## DT01.2 - UPPER PLATE

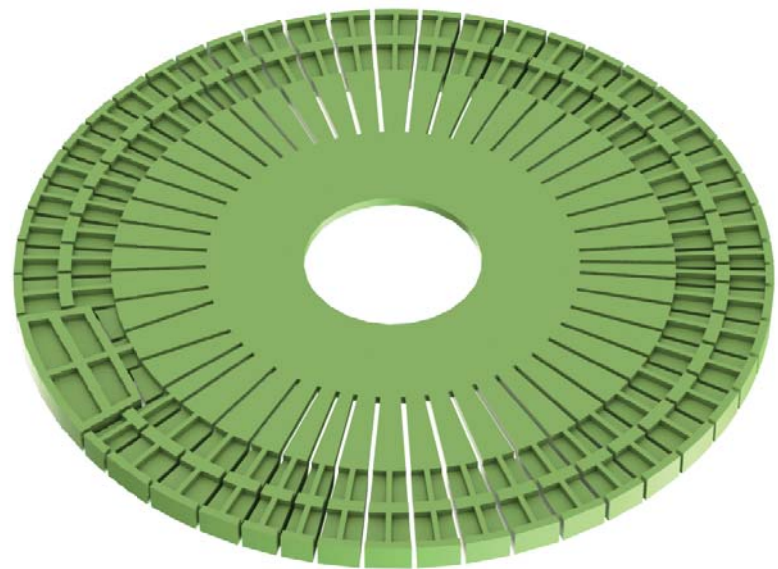
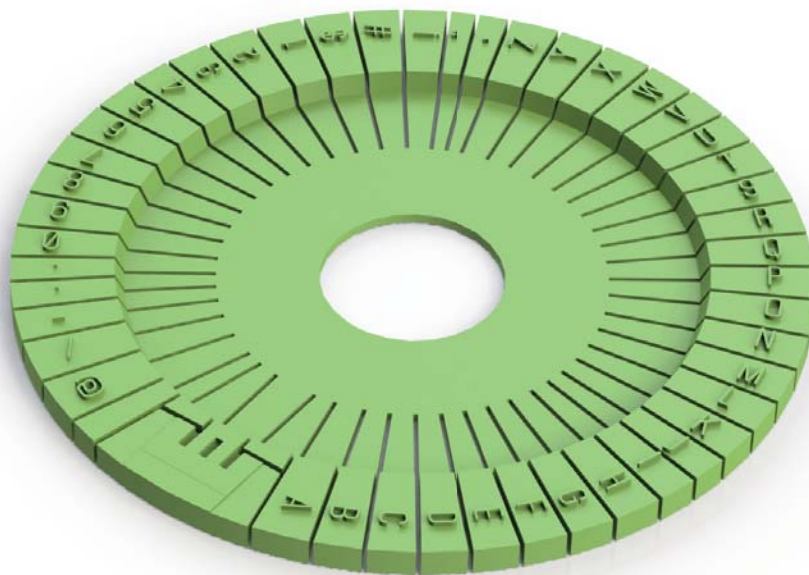


## DT05.1 - UPPER LETTER PLATE





## DT05.2 - BOTTOM LETTER PLATE



## DT06 - BOTTOM PLATE



## BOTTOM CASES

- BOTTOM LEFT CASE
- BOTTOM RIGHT CASE



## DT03 - BACK HANDLE



## DT04 - FRONT HANDLE



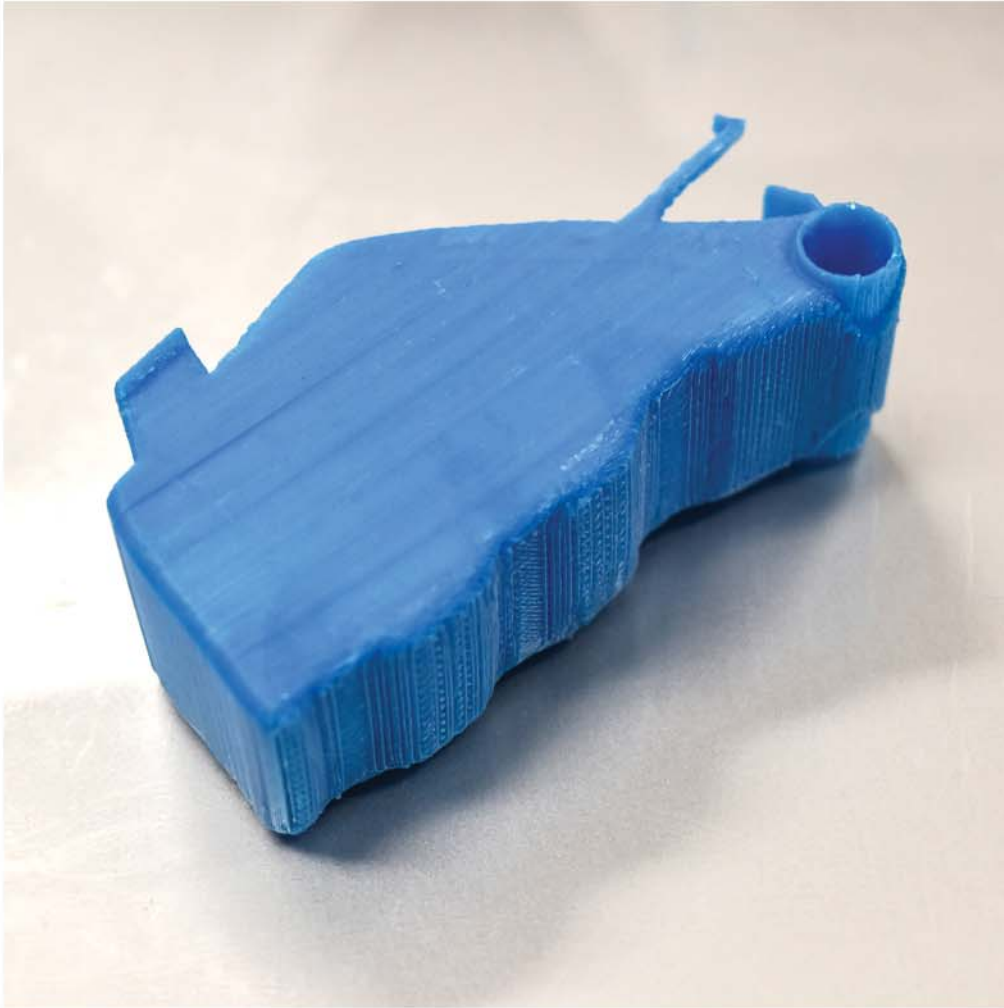
## SMALL COMPONENTS

- Spring
- Spring Support
- Insert
- Connector
- Steel Tension Device
- Gear
- Stopper

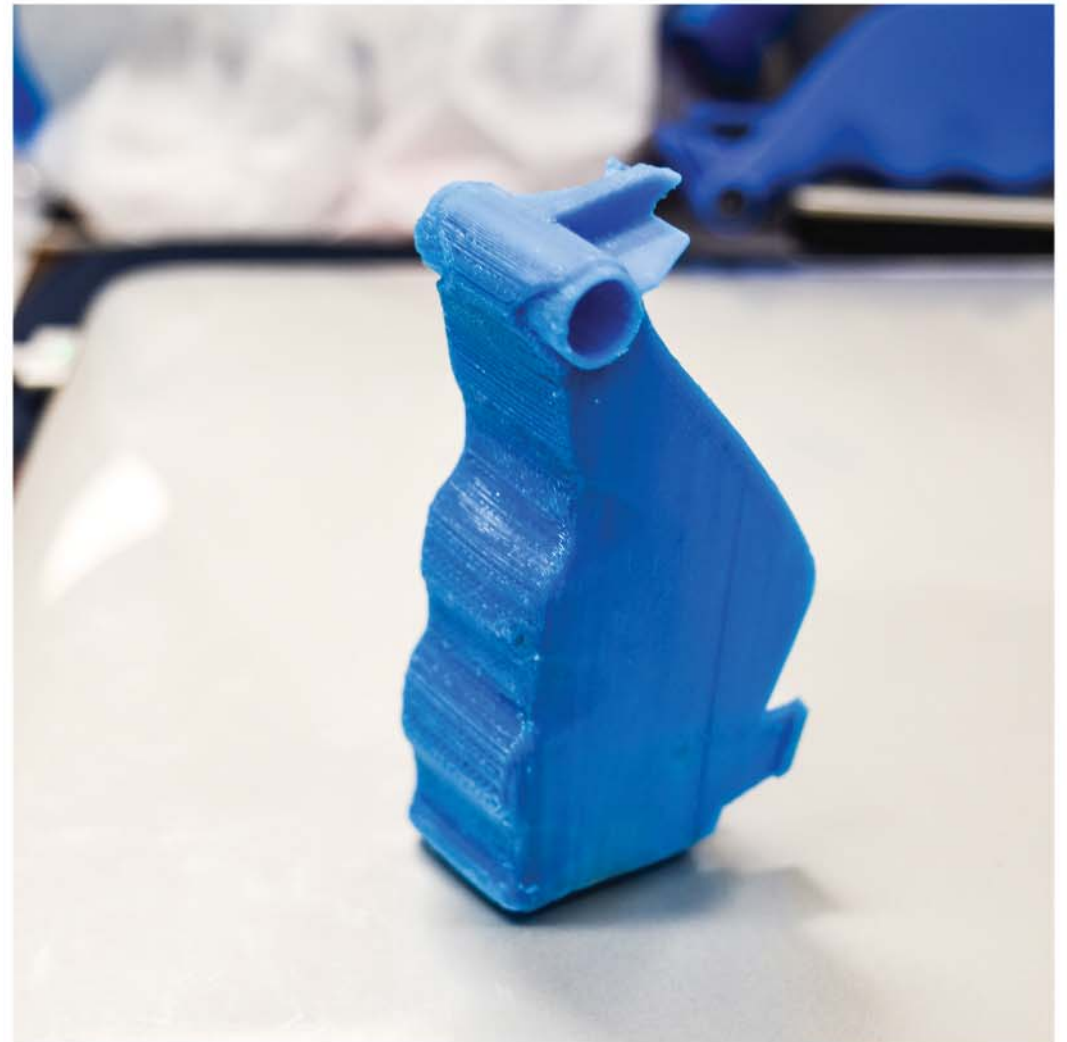




## 3D PRINTED MODEL



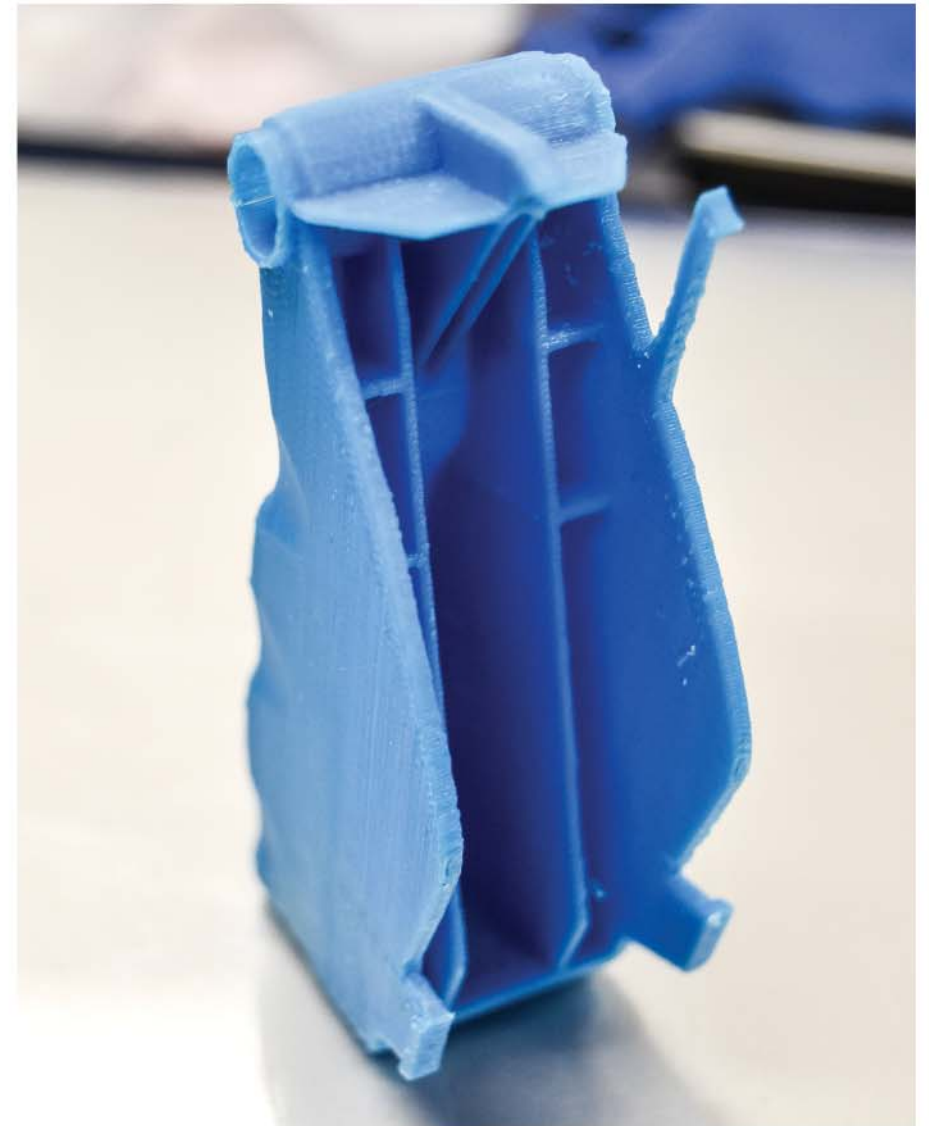
- Fused Deposition Modelling (FDM)
- ABS plastics
- Rugged curve surface requires post-processing with acetone to achieve a smooth finish



## 3D PRINTED MODEL



- Details, such as the fillet on the hand grip and ribs inside the part, are accurately shown in the 3D printed model
- However, thin wall thickness can cause problems when printing and the part may be fragile to handle



## COMPARISON



- The 3D printed part resembles the actual model fairly accurately, despite some minor discrepancies in some height and width dimensions

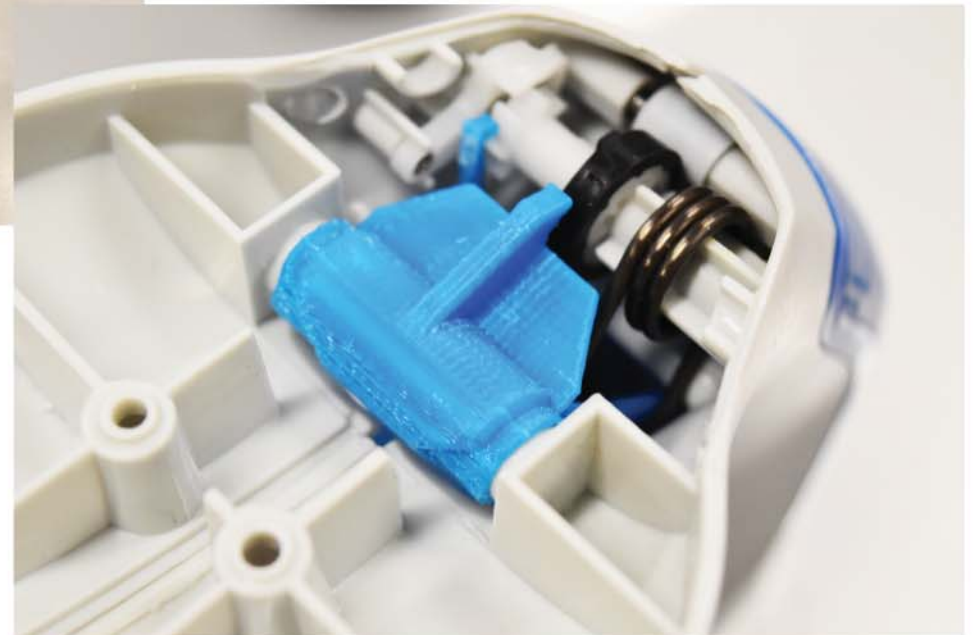
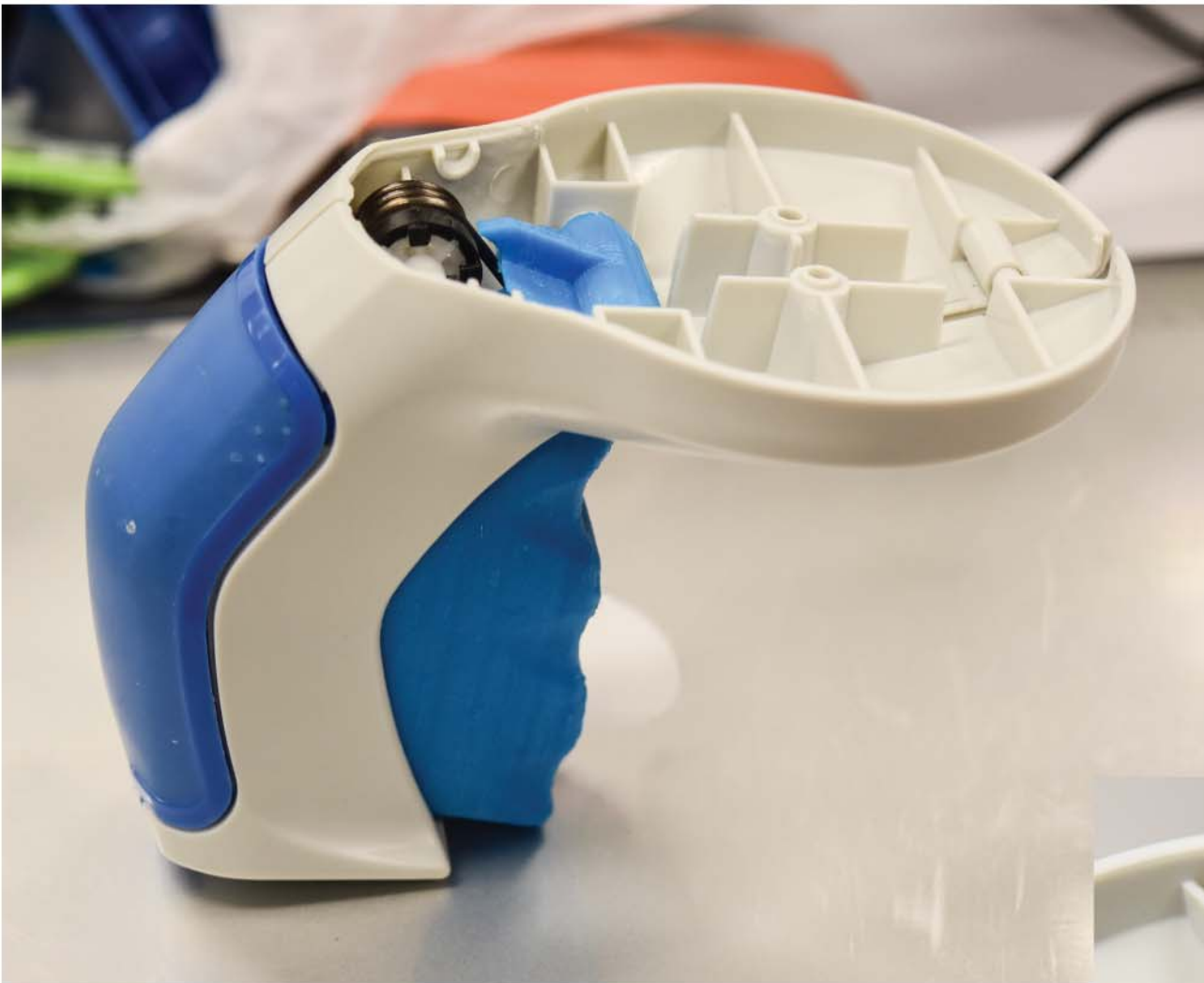




## MODEL TESTING

- The 3D printed model is tested in the actual model to check its accuracy in the reproduction of the front handle

- The 3D printed part fits into the DYMO EMBOSSEER nicely and is in the right position in correlation to other internal components



## MODEL TESTING



- The assembled model with the 3D printed part looks considerably alike with the original product



- The hand grip of the 3D printed model is tested with hand and is shown to be replicated correctly

# SELF REFLECTION

Life Size project is a challenging task and it was quite puzzling in the beginning to make a thorough plan, as the embosser requires the skills in surfacing. This technique was only briefly introduced in class, therefore I had to take a lot of initiatives to find extra tutorials online. I encountered many errors when trying to create a smooth surface for the case of the embosser and difficulties in thickening them. It was by the help and tips from Pat (the assistant in class) and numerous of trials and errors at home that I could successfully create the surface and resolved the issue of thickening.

Many hours were dedicated to create all the internal details of the components and master the use of different features. Aiming to create an interference-free assembly, I have learned from mistakes that it is better to work in assembly mode when the parts are snap fitted together. Reverse engineering has been very helpful in understanding the common components used in products and the methods of creating these items in Solidworks.

I started planning early for this project, however an unexpected incident happened that deterred my schedule. I decided to use Shapeways to 3D print my part and allowed almost three weeks before the due date for it to process. The part had been successfully produced yet unfortunately, the shipment was lost when they distributed the package to the delivery company. They guaranteed for a reprint, but the shipment would arrive later than the due date and I would be overseas by then too. As I have planned early, I had enough time to contact and arrange an express 3D printing service in Melbourne. Although the printing quality was not very professional, the model demonstrates the form of the front handle accurately.

All in all, CAID to CAM allowed me to learn to use Solidworks effectively, execute different computer-aided prototyping methods, and be organised and plan ahead for my future projects.