# **Design process**

## Idea generation

Here we all offered ideas as to the type of beam we could make and looked at which we felt would be the beam with the best strength to weight failure rate.

## Selection of design

This is the design we decided to go with as we were positive we could make it correctly and we felt that it would be both strong and light.

## Calculation of sizes of MDF needed

We used our sin, cos and tan laws of triangles to find out the sizes of the angled pieces we needed. We also decided to use the max dimensions as for our design we felt this would make it as strong as possible without adding too much weight.

## Calculation of expected failure load

We used the formulae and constants given to us in the week 6 lab to calculate how much weight our beam could handle until destruction.

## Writing out of cutting list

Already knowing our design and the sizes of each part needed we just compiled a cutting list for the sizes of MDF needed.

## Receive MDF

We receive the MDF on the 25th of March.

## Marking out of sizes

We mark out the sizes on the MDF before we cut it measuring at least twice to ensure measurements are correct before cutting.

## Cutting of pieces

Cut the pieces following the measurements marked out previously on the MDF. All the pieces in our design are rectangular so it should be easy to cut each piece.

## Marking out of design on large side pieces

Then we mark out the design on the larger sides so that we are sure exactly where to glue the smaller rib pieces.

## Lining up of each piece in accordance to design

We then line up each of the smaller rib pieces to the markings on the ensuring that everything lines up correctly.

## Gluing of pieces

We then glue the pieces together following the markings already on the MDF.

## Allow time to dry

We then leave the beam allowing the glue to set fully.

## Test

Test the beam until failure.

## Take results and compare to calculated results

Compare the results to calculated results seeing where errors may have been made between calculations and reality.