

# ENGR101 2017

## Assignment 4: Engineering Sketching

**Issue date:** Friday 5<sup>th</sup> May  
**Due Date:** 3:00pm Friday 26<sup>th</sup> May  
**Marks:** 5% of final course grade

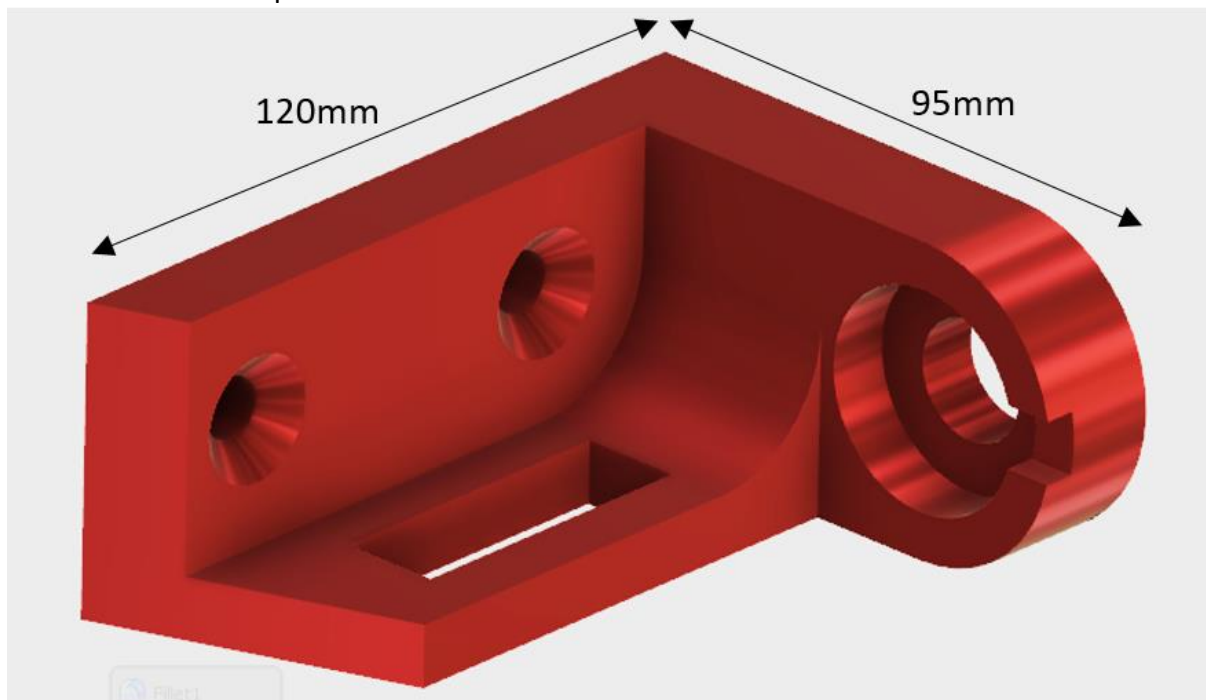
### Scenario

You are a keen mountain biker and heard about a bike fair showing off the latest and greatest in the city on a Saturday afternoon. You were drawn to a large crowd gathered round a new “fat bike” promoted by a local retailer who is planning to import a new range of these all-terrain cycles<sup>1</sup> in to the country. What is more amazing is that this bike is all electrically powered with a 1000W motor!



After a lengthy chat with the promotor he discovers you are an engineer as well as a cyclist and asked if you would help create a drawing of a simple bracket that can be manufactured by a machinist. The bracket he requires is for bench testing the integration of a new torque sensor with the motorised wheel to optimise performance. He's busy so forwards you a photo of something he snapped at a trade show he attended earlier in the year and promised you a free days riding on the HyperFat e-bike if you could sketch something up in the next 2 weeks.

You are required to create a drawing of the part below that can be submitted to a mechanical workshop to be manufactured.



**Figure 1.** Picture of the torque sensing bracket with some basic dimensions

The photo you have been sent does NOT show the part in its natural orientation, your orthographic drawing MUST show it in its natural orientation. The two countersunk holes (60mm between centres) would be used to bolt the bracket down to the bench top, the other hole ( $\varnothing 20\text{mm}$ ) is for mounting the wheel hub and the long slot is for adjustment of the sensor.

<sup>1</sup> <https://shop.juicedbikes.com/products/hyperfat-e-bike-founders-series>

## Task information

You are required to produce an engineering drawing of the bracket which includes three well-proportioned and labelled views (a plan, a front view, and a right view) in third angle orthographic, fully describing the bracket, as well as, an isometric sketch of the part ON THE SAME SHEET. Figure 1 has some basic dimensions; from which you are required to determine (make estimates of) the other dimensions to form “well proportioned” drawings. The part can be fully described using dimensions of whole numbers and in most cases these are multiples of 5mm. It is important your orthographic views contain complete and unambiguous information (shape, hidden detail and dimensions) so that the part can be fabricated accurately. Your isometric view should clearly display the shape of the part.

The drawings are to be made at 1:1 scale on one side of A3 paper and include a fully detailed title block with all relevant information. Plan the layout of your drawing to ensure all views fit on the sheet.

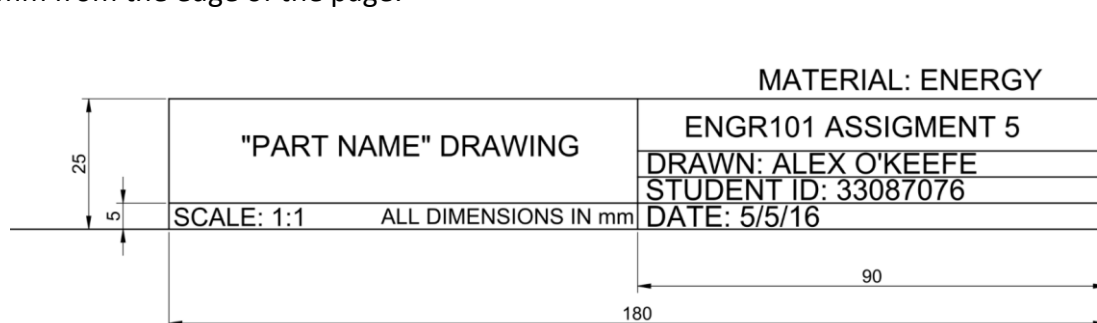
To create the orthographic drawing you may use a 2D drawing package such as DraftSight or create the views using a pencil and ruler (no ink pen).

The isometric view is intended to test your ability to sketch freehand and must be drawn in pencil **WITHOUT THE USE OF A RULER**. Use light construction lines when creating this sketch and do not erase these.

You are to submit an original drawing (not photocopied) with all of the above requirements on one A3 piece of paper with your name and student number printed in the title block.

## Title block and border

Use the standard title block template given below (dimensions are approximate) and the standard lettering shown in the sketching lectures. Include a border around your page about 10mm from the edge of the page.



## Hand-in instructions

Hand in a hard copy of your assignment to the slot corresponding to your Workshop in the Assignment Boxes located on Level 1 of the “Core Engineering” building, in the corridor to the lecture theatres E8 and E9. If you have created your drawing using software such as DraftSight then you must submit a copy of the drawing file to Learn.

You must download the assignment cover sheet from Learn and fill in your details. Fold the A3 sheet via the method described in lecture and staple on the cover sheet. Submissions will not be marked unless they have the correct cover sheet and all details completed, including your Workshop number.

## Contact details

Please forward any questions to:

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