This is a product development exercise building on the already approved, partial chassis assembly, shown in Figure 1, below. The intention is to build prototype barrows here at UTS and investigate their possibilities. Some potential applications are:

1. Mount a tank and pump with extendable hose for bush fire fighting.
2. Military equipment transport – welder, generator etc.
3. As in (1), tank, pump and hose spray for weed spraying – possibly including a wide spray bar.
4. Mower for steep terrain by having a grass cutter attachment.
5. One wheel drive tractor for developing countries.

Briefly, we will give you the Solid Works model of Figure 1 below. You will find all the necessary data from the bottom of John Dartnall’s webpage with URL: http://www.eng.uts.edu.au/~johnd

Your team has to design and produce the drawings of approximately 5 detailing exercises required for the barrow – e.g. the (front) wheel detail, the wheel axle and bearings, the motor mounting arrangement, the clutch bar and jockey wheel and the belt guard. Your team will then produce assembly drawings – fully assembled and exploded, and manufacturing drawings covering the exercises. The reference material in the URL above will be useful (although not necessarily reliable) for detailing.

We will detail the requirements and each member of the class will be required to produce detail drawings for their components so that they can be manufactured. You will need to make sure that your component fits in the assembly (Figure 1).

You are NOT allowed to drill holes in the U-shaped main member – this would allow moisture to enter and cause internal corrosion.

Measurements may be obtained from Figure 1’s solid models only.

Eventually, we will have a full set of manufacturing drawings and we will produce the prototypes here at UTS FOE so that other students can develop the product further.

Our manufacturing intention is that they will be sold as “Flat Packs” ready for assembly with spanners and screwdrivers provided by the purchasers.

Presentation – For hard copy staple or use bulldog clips – do not put in covers

Drawing File (Hard copy) - Containing:

• Title page with team name and the members listed
• A list of numbered and titled drawings – A4 size
• Two assembly drawings – whole and exploded, with parts lists – A4 or A3 size, folded so that the title box is visible
• The detail drawings, each with a drawing number and title
• Assembly instructions

Document File (Hard copy) – Containing:

• Title page with team member names, their individual contribution to the team – countersigned by them
• A set of individual member’s contributions on their approach {<= 15 lines of 11 size font for each contribution} – you can refer to drawings by their drawing numbers
• A section containing reflections by individual members – what would you have done differently if you had to do it again {<= 10 lines of 11 size font for each contribution}
• A section with recommendations for future actions in the next design stage {not to exceed 1 ½ pages}

CD or DVD containing a zip file of the above two files

P.T.O.
Grading will be out of 10 and will be upgraded to give a maximum semester grade of 25 points

- <5 Need to try harder
- 5 to 6.5 Drawings completed and just acceptable for manufacture and assembly instructions can range from – not done to poorly attempted : Documents passable to nearly good - to get 5 to 6.4
- 6.5 to 7.4 Drawings from good to full AS 1100 standard and assembly instructions up to good: Documents up to well written
- 7.5 to 10 Rising levels of excellence

Figure 1: Screen shot of the incomplete assembly.

Drawing Title Box: To contain: Drawing title; third angle symbol; scale; Team name; Drawn by; tolerances; - as a minimum.

Component Table: A table containing the referred detail drawings and the manufacturer and their catalogue number for “bought-in” components (e.g. ball bearings), together with the quantity and size of standard items (i.e. nuts, bolts, plain & spring washers) should be included – on the Assembly drawings and, when necessary, on detail drawings.

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