

# Anthropometric “Kick Bike/Amish Scooter”

## Research Assignment

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TST 161 - Spring 2011 – Asper

There has been increasing attention, in the popular media, to the design and building of unique custom built **Kick Bikes** based upon the design of the original **Amish Scooter**. A bicycle manufacturer, who wants to capitalize on the renewed interest in this human powered vehicle (HPV) concept, has approached you to **design a kick bike/scooter** based upon this unique vehicle. The client however wants to maintain appropriate **anthropometric considerations** in the design. In reality then, he is looking for the design of a “grown-up” scooter as opposed to the child’s “Razor” style scooter.

Your assignment then, is to research the Amish Scooter/Kick Bike design elements, and incorporate these elements into an anthropometrically correct HPV. As a starting point, you will use your personal manikin to scale the first prototype HPV. The goal of this design will be to apply the Amish Scooter/Kick Bike design concept to an HPV while attending to your personal size requirements. Therefore, your ¼ scale manikin will need to fit a **¼ scale drawing** of your design. With a view to economy, you will specify **standard bicycle parts and sizes**, especially **the wheels, front fork, and head tube size and source** (or identify donor bicycle/s). Your research, and consequently your ¼ scale side view drawing, will need to determine standard sizes for these parts. Keep in mind that your design, adhering to the above constraints, could be used by home builders interested in the recycling benefits of utilizing parts from discarded bicycles.

The submittal of your design will include at least **an annotated, ¼ scale, side view drawing** of the HPV. Remember that this is a formal presentation to a client, and should be your best work. The **annotations** will start with a brief description of the intent of your design (exercise, commuting, recreation, or competition), indicate materials, parts sources, sizes, and etc. These annotations should be type-set and attached to your ¼ scale drawing. You may need to obtain a larger piece of paper for this presentation. **Your personal manikin will fit this drawing.** Your manikin will be mounted to this ¼ scale drawing by the pins at the hip, shoulder, elbow, and wrist (leaving the legs free to move). Therefore you will be illustrating the posture that you intend the rider to take which will accommodate the intent of your design. See the attached illustrations.

You will also prepare a design presentation (pictorial drawing) for a potential client that will include an **isometric or perspective presentation drawing** of your HPV. This presentation drawing will include appropriate **shading, shadow and texture**. This illustration **does not need to be ¼ scale** and will also be mounted directly to the ¼ scale side view drawing. Again, remember that this is a formal presentation and be an example of your best work.

# Anthropometric

## “Kick Bike/Amish Scooter”

### Evaluation \_\_\_\_\_

General Comments \_\_\_\_\_

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\_\_\_\_\_ Quality of overall research and presentation (20)

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\_\_\_\_\_ 1/4 Scale side view drawing (20)

\_\_\_\_\_ Appropriate annotations (5)

\_\_\_\_\_ Fit of the “Personal Manikin” with the kicking process (10)

\_\_\_\_\_ Fit of the “Personal Manikin” with the steering system (10)

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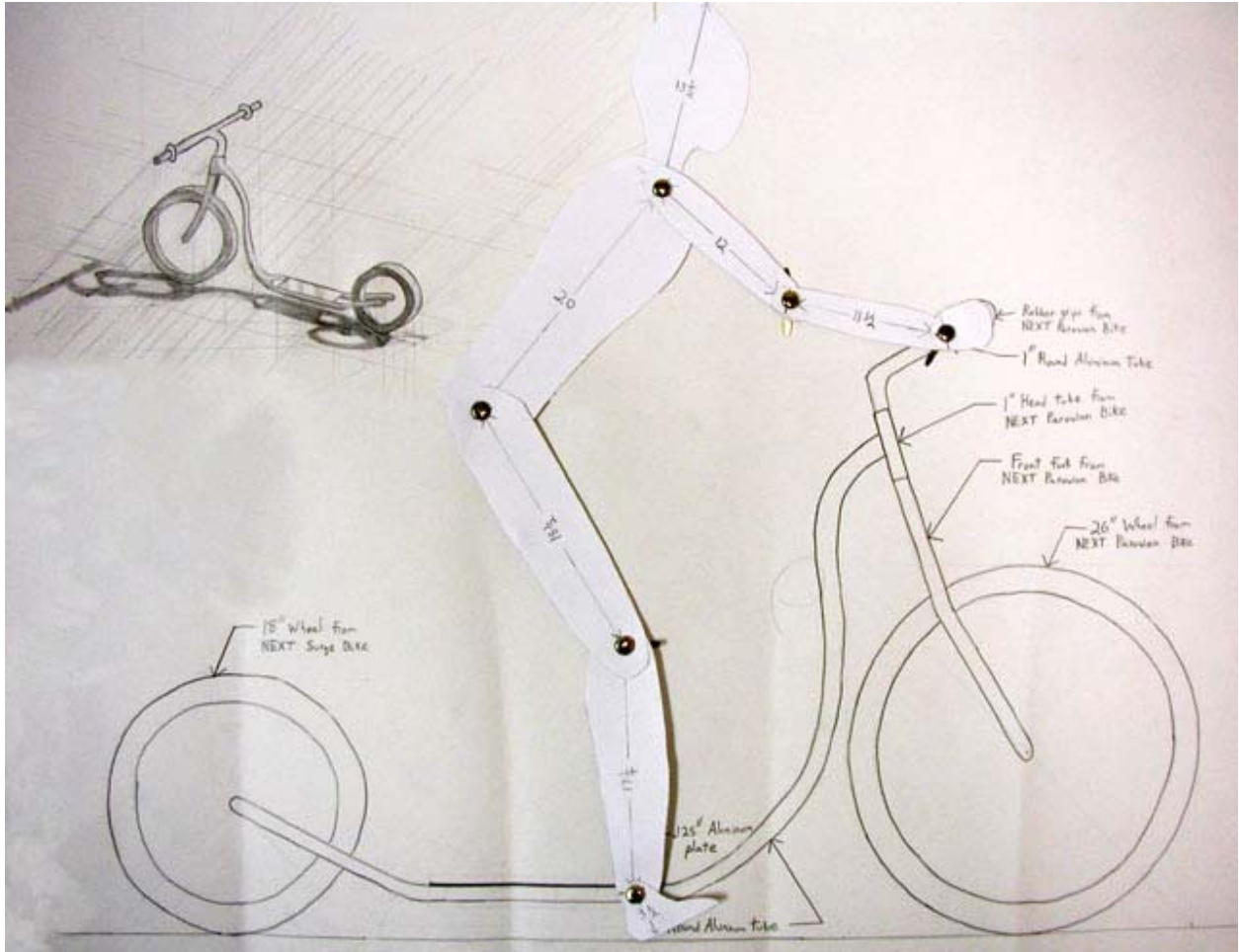
\_\_\_\_\_ Isometric/Perspective (pictorial presentation) Drawing (20)

\_\_\_\_\_ Shading (5)

\_\_\_\_\_ Shadow (5)

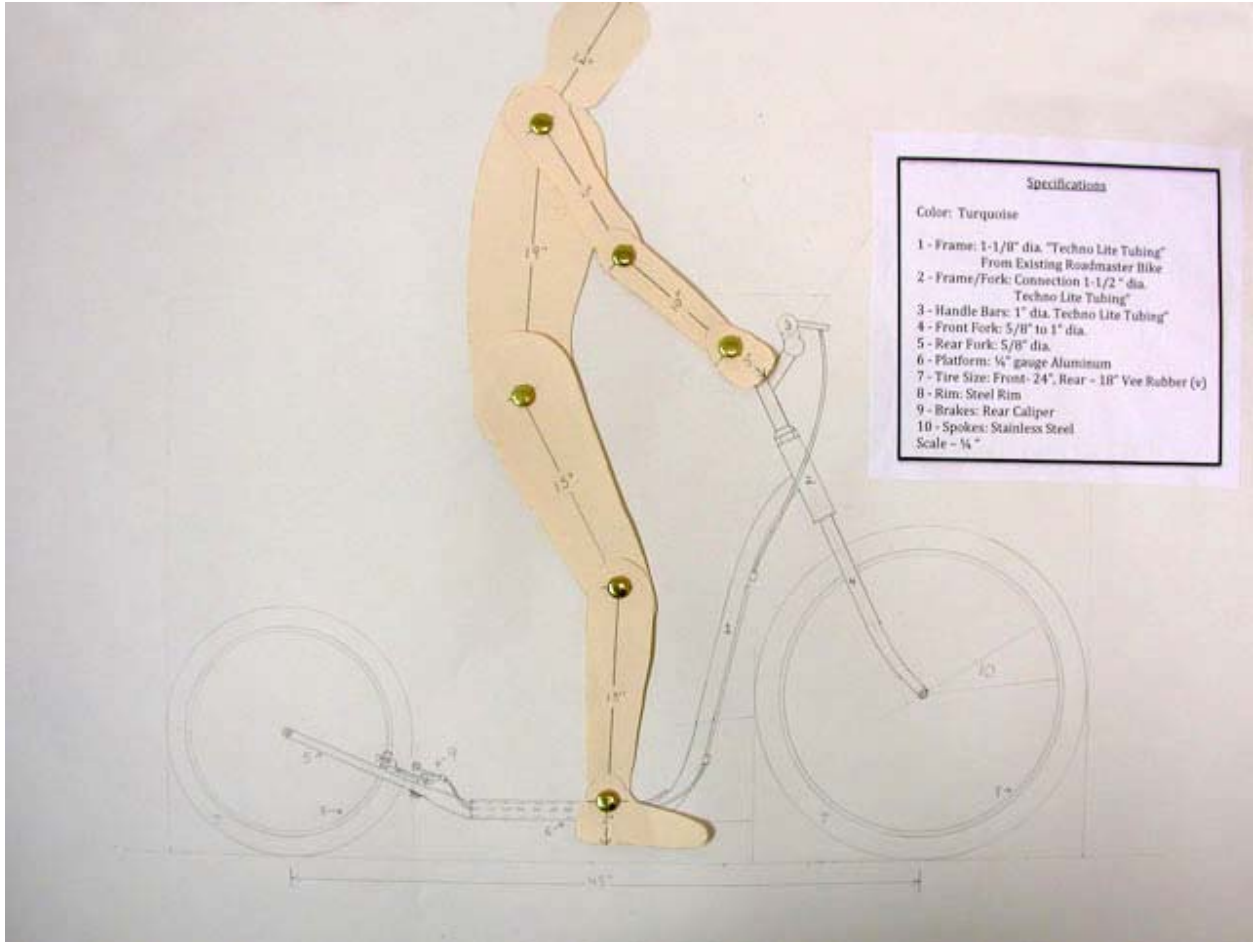
\_\_\_\_\_ Texture (5)

\_\_\_\_\_ *Total Score*



1. Front Wheel - 700 x 35 c, 27.5 inches  
\*As found on the HIGGALY W bicycle by Norco Bikes!
2. Spool Patch - 413 mm / 16.3 inches  
\*As found on the HIGGALY W bicycle by Norco Bikes!
3. Head Tube - 180 mm / 7.1 inches  
\*As found on the HIGGALY W bicycle by Norco Bikes!
4. Basket - 1200 inches (used to carry various miscellaneous items)
5. Altec Comfort Flat-Free Handlebar - Grip area size = 22.2 mm / 7/8"
6. Top Tube Height from Ground - 34.5 inches
7. Deck Size - 24 x 9 inches
8. Ground Clearance - 4 inches
9. Back Wheel - 16 inches  
\*As found on a children's bicycle!
10. Spokes - VCP Spokes





**Specifications**

- Color: Turquoise
- 1 - Frame: 1-1/8" dia. "Techno Lite Tubing"  
From Existing Roadmaster Bike
  - 2 - Frame/Fork: Connection 1-1/2" dia.  
Techno Lite Tubing
  - 3 - Handle Bars: 1" dia. Techno Lite Tubing
  - 4 - Front Fork: 5/8" to 1" dia.
  - 5 - Rear Fork: 5/8" dia.
  - 6 - Platform: 3/4" gauge Aluminum
  - 7 - Tire Size: Front - 24", Rear - 18" Vee Rubber (v)
  - 8 - Rim: Steel Rim
  - 9 - Brakes: Rear Caliper
  - 10 - Spokes: Stainless Steel
- Scale - 3/4"

