

Anthropometric Bicycle Research Assignment

TST 161 – Dr. Asper

There has been a growing number of television programs dealing with the design and building of unique custom built **Chopper Motorcycles**. A bicycle manufacturer, who wants to capitalize on this renewed interest in the chopper motorcycle, has approached you to **design a bicycle** based upon this styling concept. The client however wants to maintain appropriate **anthropometric considerations** in this design.

Your assignment then, is to research the chopper motorcycle styling elements, and incorporate these elements into an anthropometrically correct bicycle. As a starting point, you will use your personal manikin to scale the first prototype "**Chopper Bicycle**". The goal of this design will be to apply the chopper motorcycle styling to a bicycle while attending to your personal bicycling comfort. Therefore, your $\frac{1}{4}$ scale manikin will need to fit a $\frac{1}{4}$ scale drawing of your design. With a view to economy, you will specify **standard bicycle wheel sizes**, and **standard pedal and crank dimensions**. Your research will need to determine standard sizes for these parts. The manufacturing client has also decided that he would like to see a **45° front fork angle**. You will therefore need to consider both steering and pedaling from your designed seated position.

The submittal of your design will include at least **an annotated, ¼ scale, side view drawing** of the chopper bicycle. Since this is a true ¼ scale drawing, there need be no traditional dimensions. Remember that this is a *formal presentation* to a client, and should be *your best work*. The **annotations** will 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 anthropometrics of your design.

You will also prepare a design presentation (pictorial drawing) for the client that will include an **isometric or perspective presentation drawing** of your chopper bicycle. This presentation drawing will include appropriate **shading, shadow and texture**. This illustration **does not need to be ¼ scale** and should 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.

Note: although the term bicycle is used generally to describe a two-wheel vehicle, for the purpose of this design problem you might also consider a three-wheeled (tricycle) vehicle.

**Anthropometric Bicycle
Evaluation** _____

General Comments _____

_____ Quality of overall presentation (20)

_____ ¼ Scale side view drawing (20)

_____ Appropriate annotations (5)

_____ Fit of the "Personal Manikin" with the pedaling system (10)

_____ Fit of the "Personal Manikin" with the steering system (10)

_____ Isometric/Perspective Drawing (20)

_____ Shading (5)

_____ Shadow (5)

_____ Texture (5)

_____ **Total Score**

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