“Cast Down Your Bucket” to UpCycle your community
Tuskegee University Department of Architecture
2020 Exert Architecture Design Competition
Developed by Professor Kwesi Daniels

The 2020 Exert Architecture Design Competition is focused on sustainable design. We are exploring resource upcycling to address the abundance of trash found within your local community. Students are tasked with using the same sustainability strategy Mr. Booker T. Washington used in the making of Tuskegee University and Mr. George Washington Carver used to develop over 200 different uses for the peanut, sweet potato, and soy bean. Material reuse was a core practice of education at Tuskegee University from 1881, beyond Mr. Booker T. Washington’s death in 1915. Mr. Washington believed in “casting down your bucket where you are” and addressing the needs at your feet. The Washington philosophy is the framework through which this year’s competition is structured. Each team is tasked with locating and cataloging found materials around your community and then converting those materials into a chair. You will located materials like cardboard, plastic bottles, plastic bags, shipping pallets, tires, used materials at junkyard, newspaper, and anything else you can find and will transform them into of chair capable of supporting 300 lbs and attractive enough to be sold. The project will demonstrate the dynamic and inspiring use of upcycling, in order to keep the environment clean and provide a unique mechanism for reusing materials. This competition will give students the opportunity to express themselves creatively, learn about financial literacy, and team building skills. It is important that you think outside of the box and push your creativity to its fullest potential.

**REQUIREMENTS:**

1. **SUPPORT 300 POUNDS**
2. **MUST BE AESTHETICALLY PRESENTABLE**
3. **MUST INCLUDE A DISPOSAL PLAN WHICH HAS A NET POSITIVE IMPACT ON THE ENVIRONMENT (UPCYCLE, RECYCLE, COMPOST, ETC).**
4. **MUST BE DESIGNED TO YOUR ANTHROPOMETRIC DIMENSIONS**
5. **MUST HAVE A BUSINESS STRATEGY ASSOCIATED WITH SELLING IT**
SUSTAINABLE CHAIR DESIGNS BY THE TUSKEGEE ARCHITECTURE 2022 DESIGN STUDIO ON DISPLAY DURING EARTH WEEK AT HENDERSON HALL, TUSKEGEE UNIVERSITY, TUSKEGEE, AL 4/22/19 TO 4/26/2019

OUR RECLAMATION IMPACT IS EQUIVALENT TO:

GREENHOUSE EMISSIONS OF...

CO2 EMISSION FROM...

GREENHOUSE GAS EMISSIONS AVOIDED BY...

CARBON SEQUESTERED BY...

ENVIRONMENTAL IMPACT OF UPCYCLING CARDBOARD, PLASTIC BAGS, WINE CORKS, AND SHIPPING PALLETS INTO CHAIRS...

1. We reclaimed approximately 159 kg of CO2 or the equivalent to 12% of 1 ton of CO2.
2. The social cost of these chairs is approximately $42.
3. Six students saved approximately $500.00 by using reclaimed materials to construct their chairs.
Here are some examples to give you some inspiration!

Stool made with one months waste

Plastic bottle tower

Plastic ideas
Examples from previous students:
ARCHITECTURE/ARCHITECTS

For this project students are required to create a step by step process of the chairs

- Photo documentation of your progress must be included
- You must give a thorough explanation of how you made your chair and what natural resources you used.
- Create a powerpoint that you will present with your chair at the end of the competition.

See the next page for an example of your presentation
1. Collect up to 50 plastic bottles and begin cutting 25 of the bottles as shown in image one. Make sure that the bottles that you collect vary in sizes. For example collect 25 Dasani, Smart Water, or Fiji water bottles and 25 Walmart, Publix, or Kroger brand water bottles. Cut the Dasani, Fiji and Smart water bottles.

2. In the other 25 bottles, fill with air by simply blowing in bottle and closing the top. Fill all the half cut bottles with trash (none food); such as loose paper, plastic bags, etc.

3. The bottles should resemble something like the image to the left. Put the bottles together in a rectangular form. It is recommended the bottles should be in 6 rows of 4 but a little personalization to your body type is also recommended. See the images below for examples.
4. Find a box to cover the bottles with, this will become your seat. Flip the box upside down and place on top of the bottles. For more lift off the ground, stack 4 flat boxes together and place them under the bottles as seen in the image to the left.

5. For the back of the chair, find 5 flat cardboard piece that measure 25 inches tall and 19 inches wide. Measure 13 inches above the seat and 4 inches below the seat and place the back in that position. Fasten it with hot glue or clear industrial tape.

6. For the legs open up a box as seen in the image to the left, or measure 30 inches on a flat cardboard piece marking each 10 inches. If you have a box just cut the sides of and fold to make a triangle. If you have a flat cardboard piece, fold the box at every 10 inch marker to make a triangle. This will give you a 9 inch lift off the ground. Do this twice for both legs. Fasten it with hot glue or clear industrial tape.
7. Cut 4 inches down and 3 inches wide as shown in red in Figure 1 on both legs. Insert the bottom of the chair back connecting the back of the chair to the legs. Fasten it to make sure it stays in place and also fasten the legs to the bottom of the seat to make sure that legs stay in place. Reinforce the legs as you see fit.
REVAMP

This versatile furniture design takes advantage of the multiple chapters of a college student’s career. The design begins its life as a studio desk chair and foot rest, and then is revamped as a coffee table, nightstand, and bookcase to a growing library.

"Designs made with standards of the human, economy, and environment in mind."

This versatile furniture design takes advantage of the multiple chapters of a college student’s career. The design begins its life as a studio desk chair and is revamped as a coffee table, nightstand, and bookcase to a growing library.
ASSEMBLY GUIDE

TOOLS:
- Utility knife
- Wood glue
- Needle-nose pliers

MATERIALS:
- Cardboard
- Foamboard
- Shipping pallet wood
- Wire hanger
- Wooden dowels
- Nails

1. ALEX JONES  TUSKEGEE UNIVERSITY

FRONT  LEFT

BACK  TOP

2. ALEX JONES  TUSKEGEE UNIVERSITY
Use pliers to form hanger as tension wire around chair and attach by nails.
RESOURCES

WEB

Websites:
https://www.designboom.com/tag/recycling/
https://www.dezeen.com/tag/recycled-plastic/

BOOKS

Reusable and Sustainable Building Materials in Modern Architecture

CONTACT INFORMATION

For any further questions please contact Kwesi Daniels at kdaniels@tuskegee.edu or Danielle Smith at dsmith1@tuskegee.edu