



SCAN FOR
MORE DETAILS

COMPOSITE MATERIAL FURNITURE BUILD

DEPARTMENT OF COMPOSITE
MATERIALS ENGINEERING

Winona State University, Winona MN

Instructed by Dr. Kerr-Anderson
Anthony Quinn (Composite Material Engineering)
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Lydia Velishek (I-Design: Integrated Studies)
Hannah Matuszak (Marketing)

These projects were created to incorporate multiple facets of industry by combining students pursuing different Bachelor's degrees such as Composite Material Engineering, I-Design, and Marketing.

The intent of this project was to create a framework that pulls together students from multiple disciplines to work on projects together under mentorship/guidance that would be similar to real-world employment. Composite furniture building provides additional technical training, meets a need on the WSU campus, and promotes the program by making physical objects that act as passive marketing.

Special Thanks To:
Gougeon Brothers & A3 Composites

ADMISSIONS PODIUM

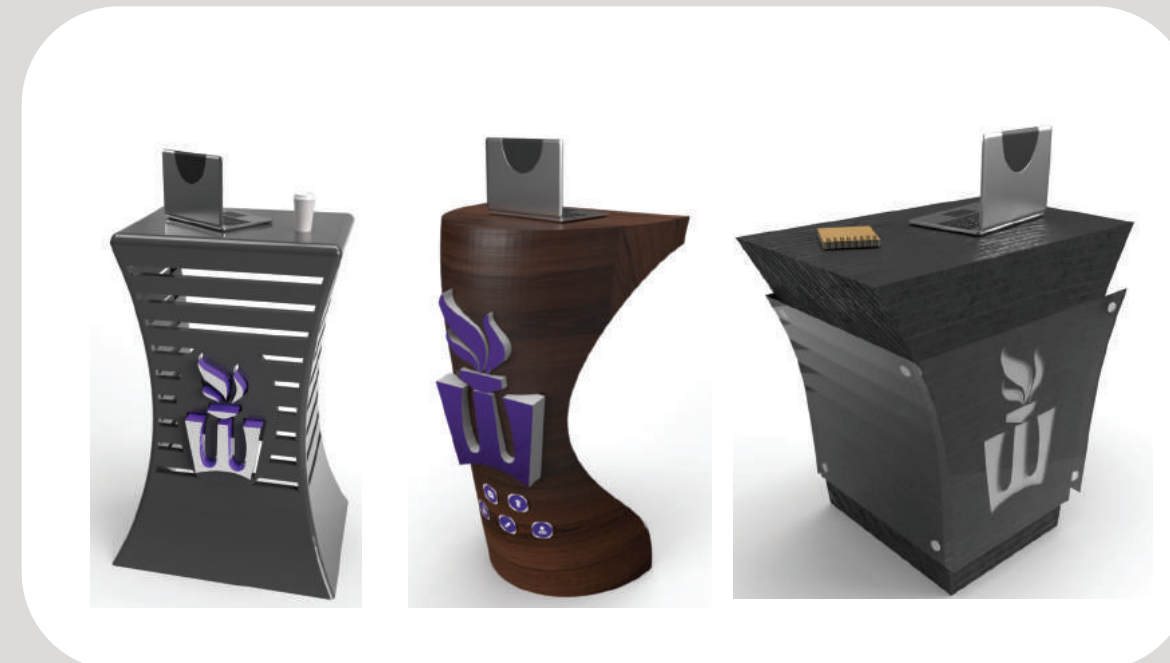
DESIGN CONCERNS

The podium posed an interesting challenge due to its ability to be leaned on, have room for foot space, and match the interior of the space as the space develops over time and as to not cause a distraction from the presentations of Admissions.

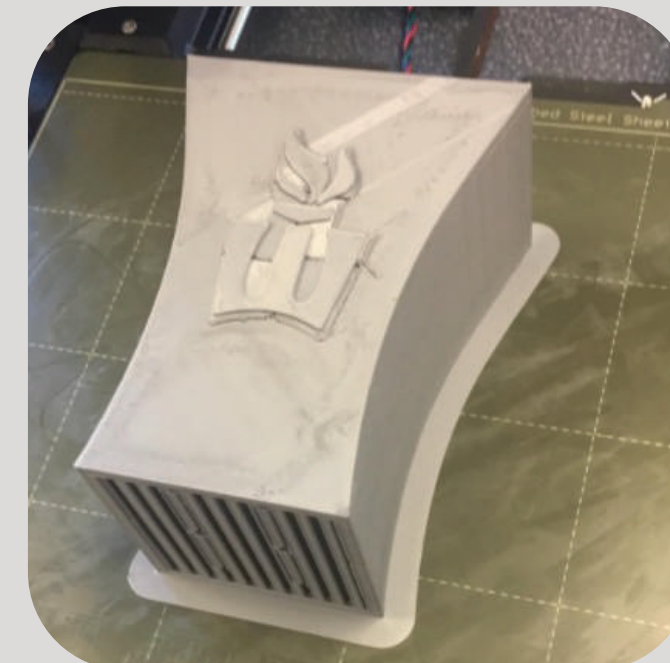
Interviewed with individuals that would be using the product to determine form and function via style and loading criteria.



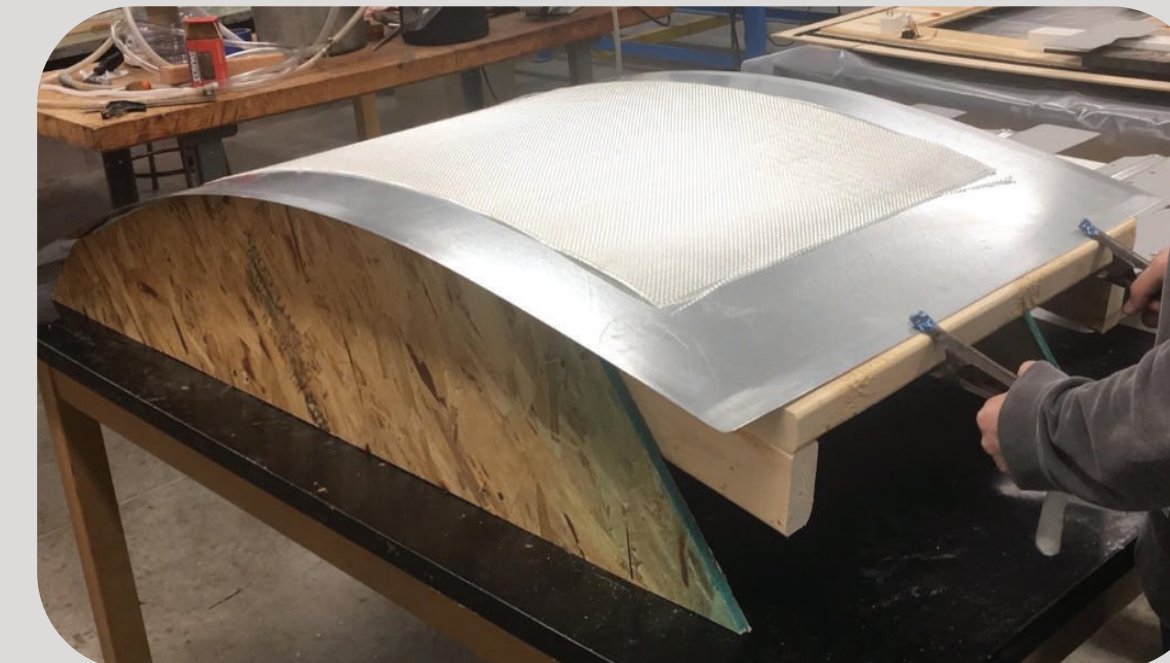
Incorporated design concerns from the interview process to Brainstorm 3 prototypes that were virtually rendered and 3D printed.



Reintroduced the design ideas with clients to get their approval for final design.



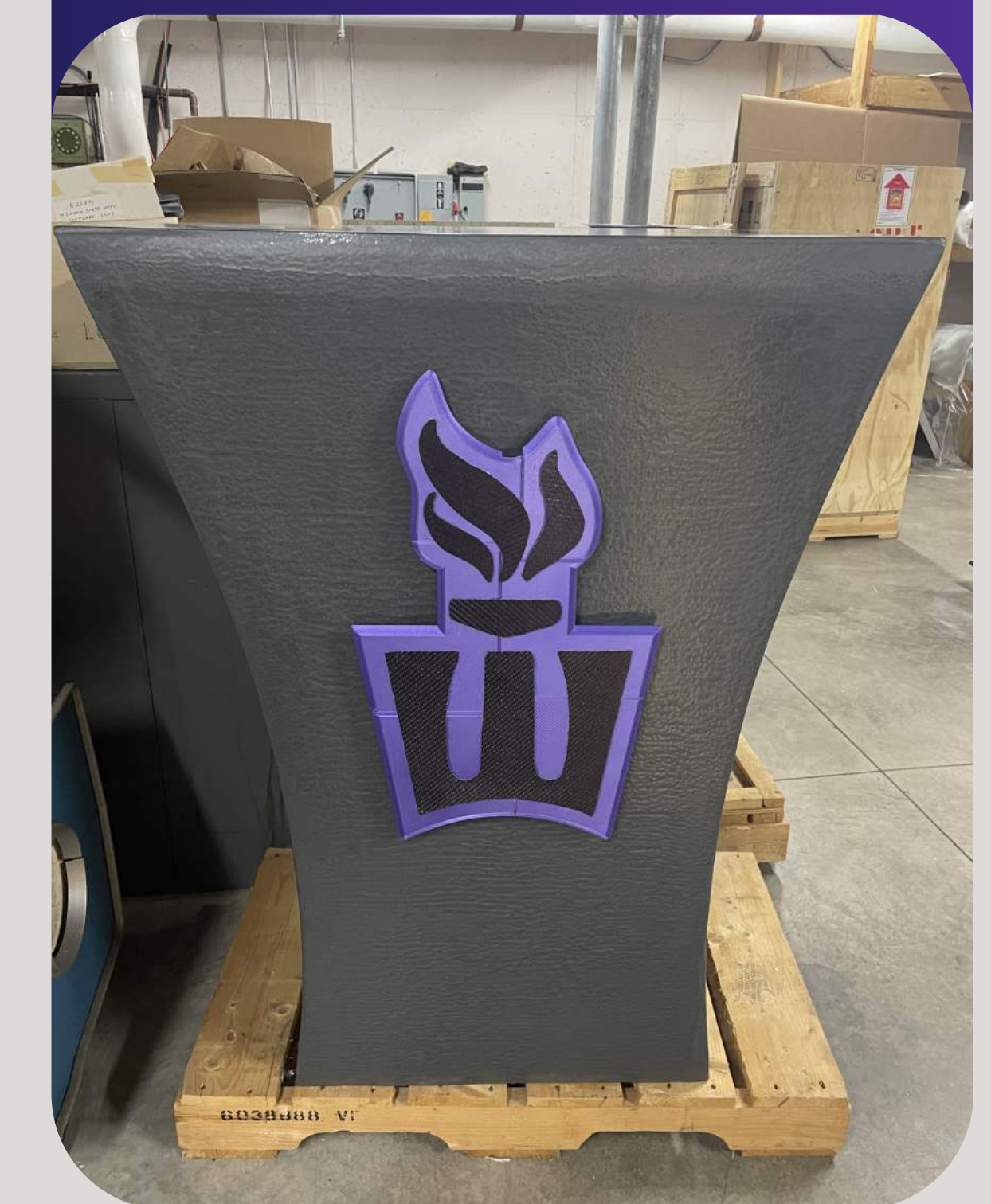
Hand layup was used to create flat sandwich panels for the shelves and a curved plate was used to generate the curved side laminates. All panel deflections and strengths were calculated using laminate theory.



Panels were assembled using wooden dowels, 3D printed supports, and an overlay of thin fiberglass created a strong slip joint to hold the panels together.



RESULT

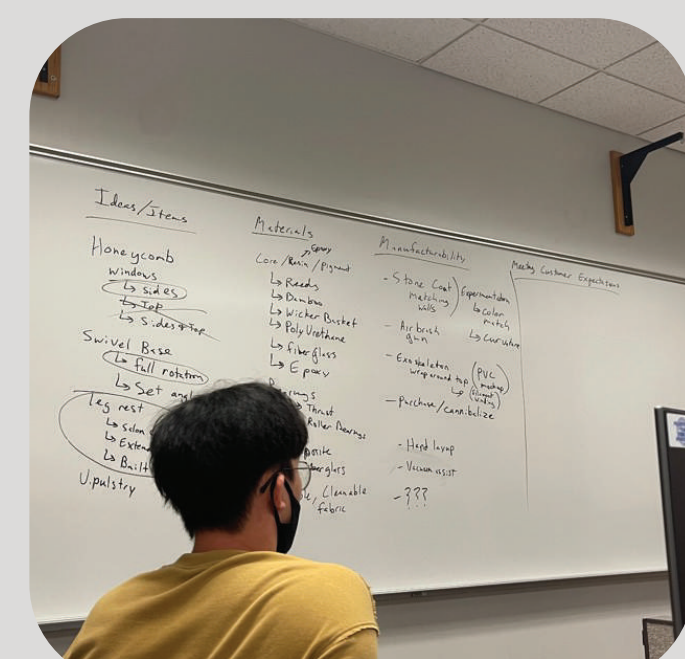


COLLEGE OF SCIENCE AND ENGINEERING CHAIR

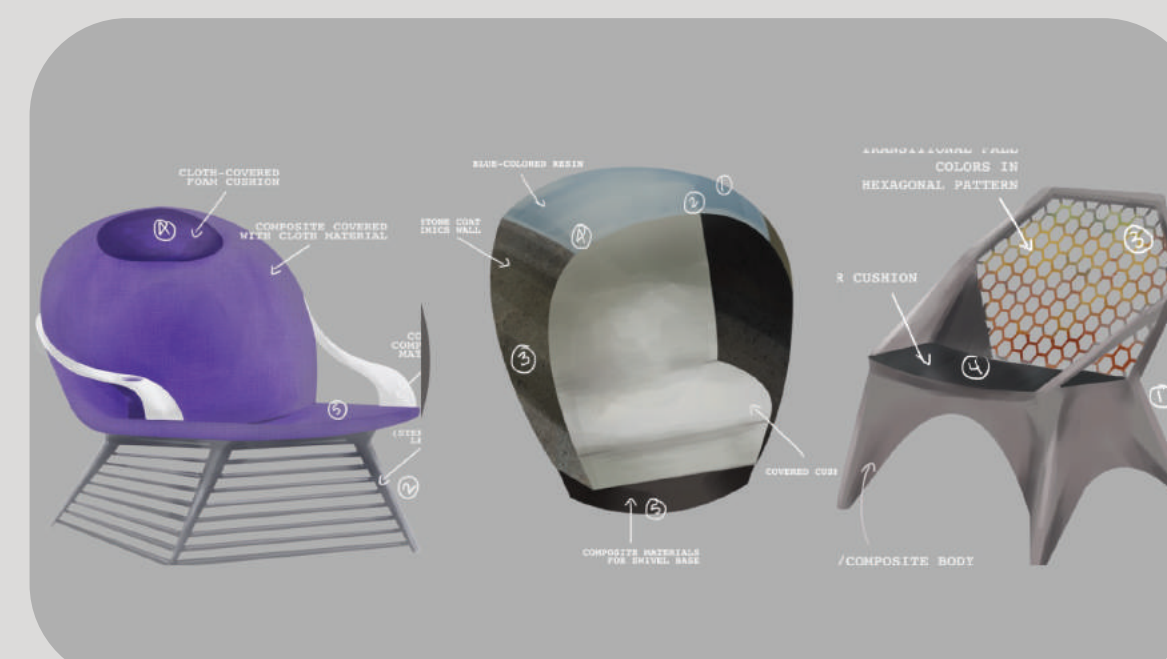
DESIGN CONCERNS

The chair's design was especially challenging due to the client's expectations for the product: modular design, an elevated footrest, enclosed sides that can still be open, and spacious seating.

Interviewed with individuals that would be using the product to determine form and function via style and loading criteria.



Incorporated design concerns from the interview process to Brainstorm 3 prototypes that were virtually rendered and 3D printed.



Reintroduced the design ideas with clients to get their approval for final design.



Began base of Chair by creating a wooden structure that would be used as the core of the chair's base.

Used Bondo to create the desired smooth finishing of edges before layup of glass fiber material around it.



Unable to complete due to material delay and limited time to finish.



DESIRED RESULT

