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Truss Frame Shelving Unit With Home Theater

by PhiGl

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The challenge was to equip our living room with a shelving wall unit that would serve for watching TV and as a bookcase.
We are an active family that is not used to spending too much time watching TV. Since we live in a small apartment, I was sorry to waste space on the TV screen, which would be black most of the time. That's why I

came up with the idea of a bookcase with a pulldown screen for projection. The unit thus serves, depending on the need, either as a large bookcase or as a very comfortable home theater.
I decided to use an aluminium truss system as the basis, which is designed for example for the construction of podiums. The advantage is that the construction is very robust and stable, without requiring more work than simply snapping the individual parts together. In addition, it is a very original design element.

Supplies:

TOOLS

- A drill with a rasping handle or an arc saw for wood
- Wood varnish and brushes
- A hacksaw

MATERIALS

Truss

I chose the Duratruss brand, but other brands are comparable. I chose the dimensions so that the inner dimension of the frame was roughly 30 x 200 cm
30 x 200 cm, which is usually the size of boards sold in hobby markets, so unnecessary cutting is saved.

- 2x corner piece Duratruss 33/2-C24-D90
- 3x straight piece Duratruss 33/2-150
- 2x base Duratruss 33-BPM

Shelves

As mentioned above, 200 x 30 cm is a fairly common size for ready-to-use planks, you need 4 4 pieces.

Boxes

In order to well into the overall concept, the box must be around 30 – 35 cm and as similar as possible in all dimensions. I found TemaHome Berlin box as the most suitable.

3D printed parts

- Shelves that inside the truss frame
- Spacer to hold the projection screen in front of the bookcase

Both SLT files are attached.

Other

- Metal cable, diameter 4 mm approx. 15 m
- Wire Cable Clamps for 4 mm wire rope, 32 x + 2 bigger for hanging projection screen
- Zip ties

HOME THEATER EQUIPMENT

For wireless audio transmission via bluetooth without latency, both projector and speakers need to support the aptX codec!

Projector

I chose a very convenient solution in the form of a projector with a built-in Android TV, specically the Epson EH-TW5700.

Speakers

I tried several difierent products, but I found the best combination of design and sound quality with the Ruark MR1 Mk2.
In addition, they fit perfectly into the gap in the truss frame. You just need to unscrew the legs (I replaced them

with 3d printer blanks).

Projection Screen

Any screen with dimensions of approx. 180 x 100 cm would do, ideally with an electric drive.

https://youtu.be/ttYbndJlQ1s

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Step 1: Build the Truss Frame.
That should be really easy.
Step 2: Drill the Holes for Cables in All the Shelves.
The holes should be located 5 cm5 cm from the longer edge on both sides. The gap between the wires (width of the bookcase segments) should be approx. 38 cm. I recommend measuring carefully, because this a ects the appearance of the entire work.
Step 3: Prepare Cutouts Where the Shelf Meets the Frame.
In my case, the shelves were a bit longer than the inside dimension of the frame, which is good because you need the shelf to hold and not move back and forth. But it is necessary to cut semicircular cutouts for the frame bars. The center of the semicircle should be 3,5 cm from the edge of the shelf and the dimensions approx. 5 x 2 cm. I used a rasping handle for a drill, which is far from optimal, but a functional solution.

Step 4: Varnish the Shelves
Finally, you should paint the shelves according to your taste and future use.

Step 5: Hang Shelves

Now it is the time to hang the shelves. First measure and cut the metal cables and then attach the shelves by fastening the clamps underneath them.

To ensure the correct height and horizontal level of the shelf, I found it useful to measure the correct distances from the ground in all four corners and make marks on the frame.

Step 6: Anchor to the Wall
Although the structure itself is very stable, it is certainly not a bad idea to anchor it to the wall. I used a metal strip wrapped around the frame bar.

Step 7: 3D Print Shelves

The shelves inside the frame are not only practical, but above all add to the aesthetics.

Step 8: Install Projection Screen

I hung the screen again using metal wires attached to the upper part of the structure. The screen case rests on the upper horizontal part of the truss frame using 4 pieces of 3D printed spacers.

Step 9: Projector and Speakers

The projector and speakers must be installed according to the specific situation. My projector hangs from the ceiling 2,5 meters in front of the screen. The speakers are inside the frame. It is a good idea to route all cables along the back of the truss frame using zip ties.

Step 10: Fill the Bookcase and Enjoy the Result of Your Efforts

I believe that this solution for a living room will prove to be as effective for you as it is for us.

I see another advantage in the easy possibility to make other furniture in the same design. Personally, I'm planning to make a computer desk and a coffee table.

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Documents / Resources

	instructables Truss Frame Shelving Unit With Home Theater [pdf] Instructions Truss Frame Shelving Unit With Home Theater, Truss, Frame Shelving Unit With Home Theater , Shelving Unit With Home Theater, Home Theater, Theater

References

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Manuals+,