Martz Hall Arena

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Engineering Design 100

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A final rendered image of the entire arena including the raised bleachers and track.

A final rendered image of the court; complete with team benches, a scorer's table, and of course a basketball.

A final rendered image of the basket and basket supports.
I picked Martz Hall to design on Solidworks because it's my high school's home basketball court and I played varsity basketball for four years. I played basketball at Martz Hall for 6 years, from 7th grade to my senior year of high school. I know the arena so well it would be easy to remember small details and design from it.

For the basket assembly, I made a support and a backboard that attach to hang from the side of the raised bleachers. For the supports, I extruded a square and then extruded four long arms on the corners. For the backboard itself, I extruded a large rectangle for the base. Then, I used an extruded cut to cut into the back to make the inner frame. Then, I made a new plane and extruded a circle and filleted the edges to round them off. Next came the hard part (and my two new features I learned!). The net strings were made using a 3D sketch. I made two that cross each other and then used the circular pattern feature to put them around the hoop. Then I attached the supports to the backboard.

The court was made using a series of extrudes to make separate the lines and different sections of the court. Each corresponding color has the same height of extrusion.
The scorer's table was made using the extrude feature and then an extruded cut where the chair holes are.

The benches were made using the extrude feature.

The basketball was made using the revolve feature. The color is a bit off but it's the thought that counts.
The raised bleachers were made using the sweep feature, leaving a hole in the middle for the court.

The regular bleachers were made using an extrude feature. Then the extruded cut feature was used to hollow out the inside of the bleachers.
The final assembly drawing with some dimensions from the court and the arena bleachers.

The hardest part of his model was definitely all the mating that had to be done for assemblies. The edges sometimes don’t match up correctly and it can take a while to get everything done correctly. The new features I learned were the circular pattern and the 3D sketch tool. I personally have never used Solidworks before so all of this was very new to me. I learned a lot about the actual software, but also I learned I need to be patience with technology and not get frustrated too easily.