The Knight Bus

From *Harry Potter and the Prisoner of Azkaban*

![Image of the Knight Bus](image)

**Figure 1. The final rendering of my Knight Bus**

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The inspiration for my personal CAD project came from my favorite books and movies, the Harry Potter series. The triple-decker bus that I created is called the Knight Bus. It is first referenced in the third novel, *Harry Potter and the Prisoner of Azkaban*, by J.K. Rowling. It was later produced in the movie by the same title, which was released in 2004. The scene that features the Knight Bus is one of my favorite scenes in all of the eight movies because of the new characters and music. In November of 2014, I went to the Wizarding World of Harry Potter in Universal Studios Florida. It was really neat to see the bus in the movie come to life. The Knight Bus was a good way for me to incorporate my interests in entertainment into this project.

![Knight Bus](https://inspiredadornations.wordpress.com/2012/07/15/the-harry-potter-studio-tour/)

**Figure 2.** One of the photos I used to model the front of the Knight Bus.

https://inspiredadornations.wordpress.com/2012/07/15/the-harry-potter-studio-tour/

I used a variety of photos to model the bus from because the bus looks different from every angle. Most of the pictures were of the replica at Universal Studios or the original bus from Warner Bros. Studio. It would have been helpful to have a panoramic shot of the bus or a virtual representation that I could have seen it from each angle by only using one.
The project itself involved a lot of boss extrudes, extruded cuts, fillets, and lofts. First, I drew the shape of the bus, and then extruded it and made fillets on the edges. I used extruded cuts to make all of the windows and boss extrudes to make the ribs on each side. For the front of the bus, to make the angled hood, I used a lofted cut to get the angle I was looking for. I then extruded the grill to make the front look about the same. For the pole in the back of the bus, I lofted each section of the pole separately to get the correct shape. I used lofts for both the headlights and bumpers as well. For the stairs in the back of the bus, I drew them and then extruded the drawing, the filleted the sides to get the curvature. For the tires, I used an extruded cut first and then used lofted cuts, lofts, and fillets to get the shape I wanted.
The hardest part of the project was trying to match the dimensions and making the features on the sides and front of the bus to the correct angle. The bus itself is angled, which made adding new sketches and components to the front and sides even harder. I had added the ribs on the side of the bus at the wrong angle to begin with and then the rest of them were not parallel, which messed up the whole appearance of the bus. I had to redo about an hour and a half of work because the angles were all off.
I also struggled figuring out how I would cut the front of the bus out at an angle. I eventually used a lofted cut for it after creating a second plane that was in line with the windshield. This later made adding headlights and bumpers extra hard later, because each side had different dimensions out of the front of the bus. Making the front look like the original Knight Bus from the movies was definitely the hardest part of the project. Another hard part of creating the Knight Bus, was changing the appearance because there were a lot of edges that needed to be highlighted in order to make them purple. The process of changing the appearance of the bus took a few hours total. After rendering the bus, I decided I liked the color and appearance of the bus better when not rendered.
This semester was the first time I have ever used a CAD program. I was really nervous about the personal project at first, but after I started using SolidWorks, I began to feel a lot more comfortable with the program. Now, I feel like I could successfully make a lot of different projects using SolidWorks. Using SolidWorks it helped me to better understand CAD and the process of designing new and existing products. It takes a lot of time and effort to create something that you are happy with and proud of, but in the end, all of the hard work really pays off when you see the final product.
Figure 14. The final drawing of my Knight Bus assembly.