

Rev. 0

SYEN2233. Solid Modeling and Design Project

Ideation, Assigned: 3/31/14, Due: 4/7/14

Implementation, Assigned: 3/31/14, Due: 5/5/14

Your mechanism will mount to four mounting points, each an 8-32 tapped hole. The mounting points are 8 inches above the floor and 15 inches from the front-most point on the robot.

Design a mechanism that will allow you to pick up a standard tennis ball (look up the specs for diameter, mass) and deliver it to a goal that is twelve inches above the floor.

The front most point of your robot cannot come any closer to the goal than 6 inches. Half the diameter of the tennis ball must cross the plane of the goal in order for a ball to be successfully delivered.

Ideation: Either individually or as a group, develop several ideas for how to accomplish this task. Write a report detailing the ideas that you considered (brief) and detailing the pros and cons of two of the best ideas. Conclude with a description of the idea that you chose. You should use the output of our brainstorming activity.

Implementation: Develop a solid model of your mechanism. Write a report detailing the key features of your design. Provide an assembly drawing of your mechanism. Use your assembly drawing in your description of the mechanism's function.

You do not need to include details such as bearings, fasteners, etc. This model is just to show the concept of your mechanism. So, for instance, you can connect two links using just a datum point on each link detailing the location of the joint.

Generate graphs showing the path traced by the tennis ball in your mechanism. Extract relevant force information from your design and provide graphs demonstrating the forces as the mechanism goes through it's motion.

Generate a video of an animation of your mechanism and deliver to the instructor (youtube, mpeg-4 via email). If you agree, the instructor will post your video (or a link if it is on youtube) with appropriate citation on the course web page.