Student Name: _____ Date: _____

Activity Sheet #2

Testing the Robot

Gather a collection of soft and irregularly shaped objects. Practice using the robotic gripper and evaluate how well it works. Take notes. You may choose to make videos of the robotic performance for your report and presentation. You will be determining a way to improve the robot or a new design.

This lesson will include links to other soft robotic designs that do not require a 3D printer. If the classroom has access to a 3D printer, some downloadable plans for soft robotic frames are included. Students may also choose to do their own resource and create their own design based upon their findings and their ideas of what may work better.

Once you have built one robot and have tried to improve upon that design or designed and created a second robot, you will write a Scientific Report describing your work.

Links with resources describing how to write a Scientific Report are included. The teacher may have a specific format that she prefers and may share that with the students.

It is preferred that the students include some information from the readings and/or powerpoint as background research in the report. Proper citations should be used. The option of presenting the project results in a research paper, powerpoint, video or poster may be given.

The following links should be helpful to the student in finding the correct format for the report:

https://owl.purdue.edu/owl/subject_specific_writing/writing_in_engineering/writing_engineering_reports.html

http://writing.engr.psu.edu/workbooks/designreport.html

This is a good outline of how the Engineering Design Cycle works. The work we did in this class in designing, building testing and redesigning the soft robot is an example of the Engineering Design Cycle.

https://www.teachengineering.org/activities/view/cub_creative_activity1


Student Name: _____ Date: _____

Additional articles assigned to the student follow:

Potential and Kinetic Energy
http://www.physicsclassroom.com/class/energy/Lesson-1/Potential-Energy
Work, Energy and Power
https://www.shmoop.com/energy-momentum/work.html
Viscoelasticity
https://www.teachengineering.org/lessons/view/cub_surg_lesson04
Pneumatics
https://www.explainthatstuff.com/pneumatics.html

Soft Robotics information

https://orl.mae.cornell.edu/

https://softroboticstoolkit.com/

https://www.weforum.org/agenda/2018/06/robot-soft-hands-sustainable-production-soft-robotics/