# TCES 455, Autumn 2016

# Laboratory 7: Final robot - Segway

In this lab you will be solving a classic control problem, the inverted pendulum. You will have three (3) weeks to complete. The demonstration day for this lab will be during Finals time on 12/15. Grading will be conducted by group review, peer review and faculty review.

At this point you can use any libraries and built-in functions to make this work. You have free license to use anything available to accomplish this project. You will be provided the basic materials necessary to complete this project. However you are not restricted to only using the materials provided, please feel free to improve your project in any way you would like. As long as you meet all of the requirements of the project. You will not be turning in your code; but you will need to include it as part of your appendix for the Lab Report.

**Lab Report:**

Include this lab into your formal lab report from Lab 6.

## Design

You will be required to build a robot that will be able to self balance similar to the one that you will be shown in the lab:

* Use the NXT LEGO Robotics kit to build your robot.
* Control your robot with your Arduino using the Bricktronics NXT/EV3 shield.
* You must use the IMU in order to get it to balance.
* Of course it must be able to balance itself and correct if pushed.