AME40453 – Score Sheet

C8 – Pendulum with an Active Damper

Name(s):_____

For more details on any of the items below, please refer to the lab handout.

The following items will be *demonstrated* to the lab instructor during the allotted lab time. Credit will not be given for portions completed outside of lab.

Item and Description	Points Awarded	Possible Points
Subsystem A: Angle Encoder The time (sec.) and measured angle (deg.) are correctly printed in the serial monitor.		5
Subsystem B: DC Motor Control The motor turns one direction for 4 seconds, then stops and turns the other direction for 4 seconds.		5
Subsystem C: Mechanical Assembly The pendulum is assembled correctly with the reaction wheel and counter-weight. It oscillates smoothly.		4
Subsystem D: Data Collection and Processing The time traces of measured angle θ (deg.) and angular speed ω (deg/sec) look correct.		4
Design Challenge 1 – Proportional Feedback The reaction wheel turns in a way that dampens the oscillations.		6
Design Challenge 2 – Proportional-Derivative Feedback The reaction wheel turns in a way that dampens the oscillations. The code and gain values k_p and k_d look reasonable.		4
Clean-up The students returned the lab bench to its initial state.		2
TOTAL		30