

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