## AME30358 – Score Sheet

M5 – 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**<br>The time (sec.) and measured angle (deg.) are correctly printed in the serial monitor. | | 5 |
| **Subsystem B: DC Motor Control**<br>The motor turns one direction for 4 seconds, then stops and turns the other direction for 4 seconds. | | 5 |
| **Subsystem C: Mechanical Assembly**<br>The pendulum is assembled correctly with the motor, reaction wheel, and counter-weight. It oscillates smoothly. | | 4 |
| **Subsystem D: Data Collection and Processing**<br>The time traces of measured angle $\theta$ (deg.) and angular speed $\omega$ (deg/sec) look correct. | | 4 |
| **Design Challenge 1 – Proportional Feedback**<br>The reaction wheel turns in a way that dampens the oscillations using just proportional feedback. | | 6 |
| **Design Challenge 2 – Proportional-Derivative Feedback**<br>The reaction wheel turns in a way that dampens the oscillations.<br>The code and gain values $k_p$ and $k_d$ look reasonable. | | 4 |
| **Clean-up**<br>The students returned the lab bench to its initial state. | | 2 |
| **TOTAL** | | 30 |