

Mechatronics Engineering

- The program is unable to evaluate ISLO 5 at this time. Our cohorts are currently composed of sophomore and freshmen students. ISLO 5 is introduced during the second semester of the sophomore year.
- Of particular note from the prior semester, students demonstrated significant difficulty in applying the fundamentals of physics. Upon further inspection, students from University Physics and College Physics did not sufficiently cover material that is expected of the physics program.
- There were also ongoing issues with software deployment, implementation, and the timeliness of issue resolution.
- Both of these issues are explored further on subsequent slides.

Issue #1: Physics

- Students were not comfortable in their understanding of simple force equilibria, friction, and angular mechanics (general lack of knowledge on classical mechanics).
- Evaluation of the University Physics syllabus exposes a significant disconnect from what would be expected at other institutions of higher learning.
- I strongly recommend re-evaluation of the University Physics curriculum to make our program more in-line with those at other engineering institutions.

Issue #1: Physics Continued...

College Board Physics 1 Expectations

- Kinematics
- Newton's Laws of Motion
- Work, Energy, and Power
- Systems of Particles and Linear Momentum
- **Rotation**
- **Oscillations**
- **Gravitation**

Our University Physics 1 Expectations

- Introduction to Measurement
- 1D Motion
- Vectors
- 2D Motion
- Newton's Laws of Motion
- Circular Motion (NOT Rotation)
- Work and Energy
- Linear Momentum and Systems of Particles

Issue #2: Software Deployment Issues

- Software issues were initially present for Autodesk Inventor.
- Upon trying to resolve these issues, IS rendered half of the computers in the lab useless, and all of the computers had to be re-imaged. One computer was missing from the lab until last month.
- In this process, students lost valuable time to work on the high-performance computers. Subsequent re-imaging also ended up messing with other programs on the computer that had to be resolved on my own time. (Reflected in student complaints in course evaluations)
- While on the topic of software, there is a strong need for the control systems MATLAB toolbox. With it, our students can more easily design control systems in a way that they would encounter in industry.