Physics

Fall 2027

Weeks 11-12

Monday October 19

- T: **5D** - describe and analyze acceleration in uniform circular and horizontal projectile motion in two dimensions using equations
- O: I will be able to explain centripetal force and how it can cancel out gravity
- D: by completing the lab and writing a CER about my findings.

Calculations for Circular Motion

- Distance = circumference = $2(\pi)(r)$
- Time = period = T = time to complete revolution
- Velocity = circumference / period = d/T
- Two forces must be equal: gravity pulling weights down and centripetal force pulling weight up.
- Gravitational Force = mass x gravity= hanging mass x 9.8 m/s^2
- Centripetal Force = mv^2/r
  - = mass of rubber stopper times velocity times velocity divided by radius

Wednesday October 21

- Lab Calculations and CER
- T: **5D** - describe and analyze acceleration in uniform circular and horizontal projectile motion in two dimensions using equations
- O: I will be able to calculate the results of my lab
- D: and write an appropriate CER about the lab and results.

Friday October 23

- T: **5E** - explain and apply the concepts of equilibrium and inertia as represented by Newton's first law of motion using relevant real-world examples such as rockets, satellites, and automobile safety devices
- **5F** - calculate the effect of forces on objects, including tension, friction, normal, gravity, centripetal, and applied forces, using free body diagrams and the relationship between force and acceleration as represented by Newton's second law of motion
- **5H** - describe and calculate, using scientific notation, how the magnitude of force between two objects depends on their masses and the distance between their centers, and predict the effects on objects in linear and orbiting systems using Newton's law of universal gravitation
- O: I will solidify my understanding of Universal gravitation
- D: by completing a test review.

Monday October 26

- T: 5E - explain and apply the concepts of equilibrium and inertia as represented by Newton's first law of motion using relevant real-world examples such as rockets, satellites, and automobile safety devices
- 5F - calculate the effect of forces on objects, including tension, friction, normal, gravity, centripetal, and applied forces, using free body diagrams and the relationship between force and acceleration as represented by Newton's second law of motion
- 5H - describe and calculate, using scientific notation, how the magnitude of force between two objects depends on their masses and the distance between their centers, and predict the effects on objects in linear and orbiting systems using Newton's law of universal gravitation
- O: I will demonstrate my understanding of gravity
- D: by completing the DCA #3.

Wednesday October 28

- Last day of the 2nd Six-weeks
- T: **7A** - calculate and explain work and power in one dimension and identify when work is and is not being done by or on a system

7B - investigate and calculate mechanical, kinetic, and potential energy of a system

- O: I will be able to explore energy transfers
- D: by completing a PhET simulation