Assessment: Course Four Column

Courses (SCI) - Physics

PHYS 180:Physics Scientist/Engr I

Course Outcomes	Assessment Measures	Results	Actions
Position and motion diagrams, units especially density - Understanding position and motion diagrams, units especially density **Course Outcome Status:** Active **Next Assessment:** 2020-2021 **Start Date:** 10/04/2016	**Exam -** FINAL: One cubic centimeter of acetone has a mass of 0.791 grams. One cubic centimeter of water has a mass of 1.000 grams. Joe dilutes some acetone with water and uses it to take paint off of an old boat hull. His mixture has a density of 0.850 grams/cubic centimeter. What percentage is acetone in this mixture? **Criterion:** >50% correct	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 75% gave correct answer (10/04/2016)	
Dimensional kinematic problems - Solve one – dimensional kinematic problems. **Course Outcome Status:** Active **Next Assessment:** 2020-2021 **Start Date:** 10/04/2016	**Exam -** FINAL: As Joe is walking out of a Maverik gas station, he sees his friends traveling past at 48 km/hr heading toward Boise. He spends 10 minutes pumping gas, putting air in his tire and paying. With what constant velocity must he drive to catch up with his friends at Mountain City, which is 128 km away? Answer in km/hr. **Criterion:** >50% correct	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 100% gave correct answer (10/04/2016)	
Perform basic vector algebra. -	**Exam -** FINAL:	**Reporting Period:** 2015-2016	

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Perform basic vector algebra. **Course Outcome Status:** Active **Next Assessment:** 2018-2019 **Start Date:** 09/30/2015	Vector A has a magnitude of 47 and a direction 30 degrees above the X axis. Vector B has a magnitude of 68 and a direction 72 degrees above the X axis. Determine the magnitude of the vector which is the summation of both vectors, that is A + B AND the angle that this summation of A + B makes with the X axis. **Criterion:** >50% correct	**Criterion Met:** Yes 100% gave correct answer (10/04/2016)	
Projectile motion problems - Be able to solve projectile motion problems. **Course Outcome Status:** Active **Next Assessment:** 2020-2021 **Start Date:** 10/04/2016	**Exam -** FINAL: A big cannon fires a projectile with a muzzle velocity of 617 meters/second upwards at an angle of exactly 42 degrees to the horizontal. Neglecting friction, how far downfield will it hit the ground? **Criterion:** >50% correct	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 88% gave correct answer (10/04/2016)	
Newton's Second Law of motion problems - Work a simple Newton's Second Law of motion problems **Course Outcome Status:** Active **Next Assessment:** 2020-2021 **Start Date:** 10/04/2016	**Exam -** FINAL In an experiment at MIT Frank brings a bathroom scale into an elevator. When he stands on it and the elevator is at rest he shows a weight of 180 pounds. When the elevator is accelerating upwards the scale shows 195 pounds. Determine the acceleration of the elevator in meters/second^2. **Criterion:** >50% correct	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 100% gave correct answer (10/04/2016)	
Newton's 2nd Law with friction or springs - Be able to work Newton's 2nd Law with friction or springs. **Course Outcome Status:** Active **Next Assessment:** 2020-2021	**Exam -** FINAL: In is noticed that a cardboard box of 10 kilograms mass slides down a ramp at constant velocity when the angle of the ramp is 22 degrees. Determine the acceleration of the box down the ramp if the angle is now doubled. Include friction in this	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 100% gave correct answer (10/04/2016)	

	problem. Assume that the value of the coefficients of friction are such that μ static equals μ kinetic equals μ dynamic. **Criterion:** >50% correct		
Solve dynamics type problems - Be able to solve dynamics type problems **Course Outcome Status:** Active **Next Assessment:** 2020-2021 **Start Date:** 10/04/2016	**Exam - FINAL:** On day in the future, at a seedy bar on the planet Trantor, Peter and Joe are having a drink watching the Orion sirens dance, Peter says: "I hate this planet and I hate his town" to which Joe replies, "Yeah, I miss Earth. It's terrible being here on the equator of this spinning mud hole - it's night is only a few hours long it turns so fast - and it's getting worse. They say the rotation rate is increasing day by day." How fast must the planet spin (answer in hours per revolution) for their 1.37 kg bottle of wine to slide off the table? Since the diameter of Trantor is quite small at only 2,000 kilometers, the acceleration due to gravity is only 0.1 meters per second^2 . Assume a standard coefficient of friction of 0.5 between the wine bottle and the table top. Learner outcome 8 **Criterion:** >50% correct	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 63% gave the correct answer (10/04/2016)	
Newton's 3rd Law. - Utilize Newton's 3rd Law. **Course Outcome Status:** Active **Next Assessment:** 2018-2019 **Start Date:** 10/02/2015	**Exam - FINAL:** Look at the figure below showing three pulleys and two different ropes. Determine the pull force required to support the 5,000 Newton mass in equilibrium. **Criterion:** >50% correct	**Reporting Period:** 2015-2016 **Criterion Met:** No 50% gave the correct answer (10/04/2016)	**Action:** Spend more time on pulley problems. (10/04/2016)

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Linear momentum - Work linear momentum and collision problems. **Course Outcome Status:** Active **Next Assessment:** 2018-2019 **Start Date:** 10/02/2015	FINAL: Edit this Question Delete this Question The kids on South Street are playing a prank on Bertie the Bus driver. They hang a small 2.5 kilogram pumpkin from a tree limb directly over the street. As the 34,000 kilogram bus comes roaring down the street at 33.7 meters/second and hits the pumpkin the pumpkin breaks free of the string as it collides with the front of the bus and is projected forward. Determine the approximate velocity of the pumpkin in the forward direction with respect to someone standing in the street. **Criterion:** >50% correct	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 75% gave correct answer (10/04/2016)	
Energy Problems - Work energy related problems. **Course Outcome Status:** Active **Next Assessment:** 2018-2019 **Start Date:** 10/02/2015	**Exam -** FINAL A 3 kg rock is thrown upwards with an initial velocity of 22 m / s. Half of the initial energy burns away as air resistance friction. What maximum height in meters will it obtain? **Criterion:** >50% correct	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 75% answered this correctly (10/04/2016)	
Work performed buy an assembly of forces - Be able to determine the work performed buy an assembly of forces **Course Outcome Status:** Active **Next Assessment:** 2020-2021 **Start Date:** 10/04/2016	**Exam -** FINAL: A block slides down a frictionless curved piece of metal and runs across a flat region which has a variable coefficient of kinetic friction that varies with x, starting from u = 0 at point A. The value of alpha in the function shown is 0.1 / meter. Thus at 1 meter u would be 0.1, at two meters from point A it is 0.2 and so on. How far L from point A does the block come to rest? The value of H is	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 100 % answered this correctly (10/04/2016)	

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	4 meters. **Criterion:** >50% correct		
Rotation of rigid body - Solve rotation of rigid body problems. **Course Outcome Status:** Active **Next Assessment:** 2018-2019 **Start Date:** 10/02/2015	**Exam -** A run-away Ferris wheel of 10 meter diameter has broken free of its shaft and is rolling on the ground at a velocity of 20 miles/hour. Assuming that the wheel can be modeled as a hoop, how much TOTAL work is required to stop this rolling wheel? The mass of the wheel is 2000 kg **Criterion:** >50% correct	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 63% answered this correctly (10/04/2016)	
Gravitational type problems - Solve gravitational type problems **Course Outcome Status:** Active **Next Assessment:** 2020-2021 **Start Date:** 10/04/2016	**Exam -** FINAL: A 6 kg bowling ball is hung by a 4 meter long rope from a tree branch. It is set into a swinging oscillation. Determine the period of this oscillation in seconds. **Criterion:** >50% correct	**Reporting Period:** 2015-2016 **Criterion Met:** No 13% answered this correctly (10/04/2016)	**Action:** Spend more time on gravitational problems such as this. (10/04/2016)
Waves and oscillations - Solve problems dealing with waves and oscillations **Course Outcome Status:** Active **Next Assessment:** 2020-2021 **Start Date:** 10/04/2016	**Exam -** FINAL: If a 4 meter long string having a mass of 8.37 grams is placed between two supports, and the tension is adjusted to 122 Newtons, determine the velocity of a pulse wave traveling down the string. **Criterion:** >50% correct	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 75% answered this correctly (10/04/2016)	
Flluid flow problem - Work a fluid flow problem dealing with density and pressure **Course Outcome Status:** Active **Next Assessment:** 2020-2021 **Start Date:** 10/04/2016	**Exam -** FINAL: During Hurricane Sandy some enterprising ants found that they can float on a small cube of wood 10 centimeters on a side. If the wood has a density of 0.72 grams per cubic centimeter, how many ants could sit	**Reporting Period:** 2015-2016 **Criterion Met:** Yes 88% answered this correctly (10/04/2016)	

on the block before it sinks? Take the mass of an average sized ant to be 2 grams.
Criterion: Grades of all average > 50%.