***Lesson Plans for the Week of: 1/30/17 Teacher: Hough Course: Physics Period: 3***

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| Elements ofa Lesson | **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** |
| Objective/Focus/Essential Question | PH.2a; 4a;5a; 6b--Explain what Conservation of Momentum means--apply Conservation of momentum to problems | PH.2a;4a;5a;6b--investigate Law of Conservation of Momentum--research types of collisions, especially the differences between the types of collision | PH.2a;4a;5a;6b--research types of collisions, especially the differences between the types of collision | PH.2a; 4a;5b--Understand the two components of circular motion--understand the factors which affect centripetal acceleration | PH.2a; 4a;5b--relate centripetal force to centripetal acceleration--apply the equations for centripetal acceleration and centripetal force |
| Lesson/Act.Type of Presentation | Explain the law of conservation of momentum (LCM) a) State the LCMb) Write the equation for the LCMWhole group:Apply the LCM equation:1) Confirm the units of the variables in the equation;2) Go over situations in which the LCM holds: collisions, and when objects push away from each other3) Note that in LCM problems, there is no friction; friction prevents the law from working, and so the problem involves low friction situations like water, ice, and outer spaceDemonstrate principle using Phet Collision simulationModel Sample problem: p. 201#1 | 2 groups will perform the LCM lab  | Whole group:Explain the differences between the types of collisions, the conditions; note what causes them, and the quantities which are conserved for each collisionNote p. 212 for summary of the collisions (for study purposes)Can utilize Air Track Gizmo to ask formative assessment questions to confirm student understanding of the material; or just use the air track | Individual:Students will look up the definition, equation and SI units for centripetal acceleration in the textbook p. 224-225 and write them in their notesWhole group:Notes: 1) clarify the definition and symbols for “tangential” and “centripetal” in this context; 2) clarify what r is in the equation; 3) factors which affect ac; and 4) spiral the concept of vector, explain how acceleration occurs when things are going in circles, even when the speed is concept5) examplesSample problem: p. 226#1 | Review tangential speed and centripetal acceleration; use Circular Motion Gizmo to illustrateReview factors which affect circular motionModel Sample problem: p. 226#1Remind students of Newton’s 2nd Law and have students relate the acceleration on duckie to the force on the duckie; remind students that if it affects acceleration, then it will affect forceExplain units, symbols, direction, and equation for centripetal forceReinforce that there is no centrifugal force, only inertia and centripetal motionModel Sample problem: p. 228#2 |
| Evaluation |  | teacher observation, worksheet |  |  | Teacher observation |
| Extension/Homework | p. 191#2,3; p. 215 #11a,b p. 201 #2,3; p. 216 #22a, 23 (emphasize showing correct math and correct directions, if applicable) |  |  | p. 226#2-4 | p. 226#2-4; p. 228 #1,3,4; p. 261#10b (m = 414 kg) |

Materials:

Monday: <https://phet.colorado.edu/sims/collision-lab/collision-lab_en.html>

Tuesday:

Wednesday:

Thursday:

Friday: