

Typical Pair of Standard classes on “Impact of Masses” (100 minutes)

1. (20 minutes) **Lecture** to explain and derive factors required to categorize impact (Direct, Oblique, Central, Eccentric). **Discuss** energy loss after impact. **Discuss** practical implications on structural design for crashworthiness.
2. (20 minutes) **Lecture** to define/derive coefficient of restitution. End with **Physical Demonstration** dropping spheres of different materials onto a steel plate and measuring rebound heights.
3. (10 minutes) On blackboard, **work examples** of impact, compute change in kinetic energy.
4. (15 minutes) **Lecture** to define/discuss impulsive and non-impulsive forces, including spring support forces.
5. (35 minutes) On blackboard, **work examples** of impact with and without spring supports. **Demonstrate Computer Simulation** of problem just worked on board. **Prove** that spring stiffness has no effect by varying stiffness value. **Discuss/show** value of parameter variation in design using this simulation.