

## LAB 5: ANALYZING PROJECTILE MOTION WITH WORKING MODEL

**INTRODUCTION:** The objective of this laboratory is to analyze projectile motion using Working Model, a virtual dynamics environment software package. A virtual projectile will be created within Working Model, launched and the range recorded. This range will be compared to the analytically determined range.

### PROCEDURE:

- Review the results of Problem 12-99 (Hibbeler 11e).
- Analytically determine the range  $R$  of a projectile launched on the Earth and on the Moon with the following parameter values:
  - launch height  $h = 10$  m
  - initial speed  $v_0 = 10$  m/s
  - launch angle with respect to horizontal  $\theta = 30^\circ$
- Launch Working Model on an available computer.
- Read and complete the "tutorial" in Chapter 2 through Section 2.4 of:
  - Myszka DH. Machines & mechanisms. Applied kinematic analysis. 3e. Pearson Prentice Hall 2005.
  - This chapter is available on the course website.
- Using Working Model, determine the range of a projectile launched on the Earth and on the Moon with the above parameter values.

**REPORTING REQUIREMENTS:** Prepare a single landscape oriented slide using Power Point on a column plot appears. The plot should contain the analytical and Working Model results.