Notes for lecture 6

1. Date: May 19th.
2. Reading: the lecture material is based on Sections 2.7 of Chapter 2 of the main textbook (refer to Chapter2.7.pdf file).
3. The lecture (see LectureNotes5.pdf file) generalizes polar coordinates to 3D space and considers the following coordinates
   a. Cylindrical coordinates.
      i. This is a straightforward generalization. The position of a particle is measured by r and θ (as in polar coordinates) together with height z.
      ii. Velocity and acceleration vectors can be represented with respect to some moving (changing) coordinate system (e_r, e_θ, e_z).
   b. Spherical coordinates.
      i. The position of a particle is now measured not by x, y, z, but by the radial distance r and two angles θ and φ .
      ii. Velocity and acceleration vectors can be represented with respect to some moving (changing) coordinate system (e_r, e_θ, e_φ).
4. Ch2D.swf file in the Resources (same as before) is provided
   a. When playing the file please do not push Main Menu button, when returning please use Chapter Menu button.
   b. The content of Ch2D.swf file relevant to this lecture (yellow text corresponding to Coordinate Systems-> Three-dimensional)
5. Additional Internet resources.
   a. Cylindrical coordinates https://en.wikipedia.org/wiki/Cylindrical_coordinate_system
   b. Spherical coordinates https://en.wikipedia.org/wiki/Spherical_coordinate_system
   c. *Please pay attention to the fact that the notation in the Internet resources can be different from the one we use in this class!*
6. Additional Internet resources (curves). If want to know more about the curves we used in the illustrative examples
   a. Helix https://en.wikipedia.org/wiki/Helix
   b. Conical spiral https://en.wikipedia.org/wiki/Conical_spiral
7. Loxodrome https://en.wikipedia.org/wiki/Rhumb_line
8. The deadline for submitting assignment (see Quiz6.pdf) is May 26.