Study Guide and Assignment 2

Just a short reminder. The study guide, the web page are not a substitute for your own class notes. You should study both since not everything said in class will end up in a web page and also, some of the things on the web page are additional materials to help you which not necessarily be discussed in class, but they will supplement other exercises done in homework or in class.

II Learning Working Model 2 D, Mechanisms (Continuation)

In the last study guide, several solved exercises solved by hand were presented. You have had a chance to work with Working Model 2D to verify a couple of those solutions and at the same time get familiar with the program. Below are more examples of WM to help you understand the program better.

Example Mechanisms

- **Slider Mechanism** WM2D file slider mechanism example. (Take a look and see how it is assembled)
- **Rolling Disk** WM2D file to illustrate rolling motion and calculate velocities and Accelerations (Take look)
- **Square Block Forces** WM2D Solution to Kinetics. Here the calculations go beyond kinematics but to the calculation of forces (Take a look how force vectors and measurements are done)
- **Windshield Wipers Design** Introductory WM2 of a real application or mechanisms for vehicles. The windshield wipers mechanism is built and simulations and results observed as it operates (Take a look how it is put together)
- **Video Windshield Wipers** (Avi video of windshield wipers problem)

III Forward Dynamics

- **Forward Vehicle Dynamics Notes** (Go over these notes and expand your knowledge reading on the subject in your book for more details)
- **Pages from Vehicle, Dynamics** (Set of pages to help you in case your book has not yet arrived. In future chapters this will not be part of the guide but you need your book)
- **Forward Dynamics Lab, Introduction** (Explanation how to put together an application of forward dynamics for a vehicle. Suggestion, reproduce on your won the example following this tutorial)
- **Van Forward Dynamics Tutorial** (A different explanation for Van Problem)
Examples

- WM_Van example  Working Model solution of Van Problem.
- WM_Van example 2 Working Model 2D alternative solution of Van Problem
- Forward_Dynamics_Car Forward dynamics example of passenger car.

Homework Assignment:

- Solve problems Chapter 2.: 1, 3, 8, 10 by hand using the notes and your book.

  Due Tuesday, October 2, 2018

Computer Assignment

1. Solve by hand the following problem. Using WM2D create a model and then verify the solution. Due Thursday, October 4, 2018

   The vehicle (Volvo V90) is climbing at 30 mph on an incline of 20 degrees. Find and display all the forces indicated in the above diagram within 10 sec of travel.

2. Please turn in a directory by creating and transferring files that contain:

3. Directory Name: Please name your directory

   YourLastname_Foward_Dynamics_ME143F18

   Please turn electronically to the path indicated on Voyager:
   ..\voyager\faculty\granda\me143
Follow the format of the solution of the disk problem and tutorials provided to you. A PowerPoint or Word Files showing the steps you used to solve the problem.

- Take screen shots of the work and paste them in your document and explain what you did.
- The Working Model 2 D Files.

Do not send your assignments via email, except on emergencies (not just deadlines).