EE 559 Homework #1
Due Monday September 12, 2016

1. Consider a 6-pole induction generator with line-line voltage of 220 volts, and the below data.

   R_1=0.294 Ω X'_2=0.209 Ω
   X_1=0.503 Ω R'_2=0.061 Ω
   R_C=1000 Ω
   X_m=13.25 Ω

   In the notes, we showed how to compute the torque for f=60Hz, Ω_m=130 rad/sec, using a circuit analysis approach based on current division. Repeat this example using the circuit analysis approach based on the Thevenin equivalent. Plot the torque-speed characteristic for f=60 Hz, for Ω_m=0 to Ω_m= Ω_S=125.664 rad/sec to Ω_m=2Ω_S=251.328 rad/sec.

2. Read the notes and watch the video posted on the course webpage next to this assignment. The notes may take you 20 minutes; the video will take you about 1.5 hours. Identify, from the video if it is there, and from the notes if you find nothing in the videa, one thing that you learned about each of the following subsystems:
   a. Yaw
   b. Pitch
   c. Drivetrain
   d. Generator
   e. Power system interconnection
   f. SCADA