ECE 476 – Power System Analysis Fall 2017
Power Flow Coding Project

Due in class: Tuesday, November 7, 2017.

Project Description. Use a programming environment such as Matlab or Python to write a Newton-Raphson power flow, and use it to solve the five bus system attached (Bus5.xlsx). You need to read the five bus system data from the given Excel file. The input is the per unit power for the PQ buses (constant power loads), the voltage setpoints for the generators, and the transmission line and transformer π model parameters. You need to code PQ, PV and a slack bus. However, you do not need to consider the generator reactive power limits. Use a flat start initial guess, except set the PV bus voltage to the generator setpoint voltage. Your output should be a list of the bus voltage magnitudes and angles at each iteration. Also calculate the reactive power output for the generators and the real power output for the slack bus generator. Use a 100 MVA per unit base, and use a per unit convergence threshold of 0.1 MVA (infinity norm). Turn in a report and a complete list of your program.