Applied Thermodynamics (ME 416), Fall 2017
Instructor: Damm

Solar PV Laboratory
(Done Individually, worth 50 pts,
show your results to Dr. Damm before you leave the lab)

1. Using the "peak hours" approach, estimate the output of MSOE's solar PV system for the month of October.
2. Go to MSOE's PV system virtual kiosk at http://www.msoe.edu/community/about-msoe/who-we-are/page/1282/green-projects-solar-panels click on 'Live data feed showing output' and compare the output for October 2017 to your prediction from 1. Make a quantitative comparison statement and think about potential reasons for the difference between predicted and actual output.
3. Use the National Renewable Energy Laboratory's (NREL) software program PV Watts (http://pvwatts.nrel.gov/) to estimate the monthly and annual output from MSOE's Solar Power Plant. The array is made up of 144 205 W Kyocera panels, tilted at 30 degrees to the south. The inverter efficiency is 94%. Use the NREL default values for the derating factors except for inverter efficiency, the soiling (use 8%), shading (use 5%), snow (use 2%), and age (use 9%).
4. Go to MSOE's PV system virtual kiosk at http://www.msoe.edu/community/about-msoe/who-we-are/page/1282/green-projects-solar-panels click on 'Live data feed showing output' and compare the monthly and annual system output to the PV Watts predictions. Make a quantitative comparative statement regarding the actual output for 2016 and the predicted annual output. During which month 2016 is the % difference highest when comparing actual to predicted output? Can you think of an explanation for this difference between the actual output and predicted output?

Note: you can also get this info from the site:

http://solar.msoe.edu/