

University of Delaware
Department of Electrical and Computer Engineering
ELEG620: Solar Electric Systems
Homework #1: Solar Radiation (2 units)

Solar Radiation Questions

Do the following questions from the Questions at the end of the Solar Radiation Chapter: #1, #2, #7, #8, #20.

Write either a spreadsheet program or computer program which calculates the following parameters.

1. The angle (azimuth and elevation) of the sun for any day of the year at an arbitrary latitude.
 - a. Verify your program by selecting three locations and checking them with the PVCDROM.
 - b. Use your program to answer Question #17 for solar noon.
 - c. Answer the following question, related to Question #17: The maximum overhang width is 40 cm. To prevent solar radiation from entering past 11 am, what is the maximum window length?
2. Estimate the total solar radiation for each hour of the day.
3. From the estimate of the total solar radiation above, determine the total radiation falling an arbitrarily tilted surface.
4. Estimate the monthly solar radiation on an arbitrarily tilted surface. You may pick any month and latitude that you like