

ECE 333 Green Electric Energy

Review List

Lecture 12: Solar Resource

- Extraterrestrial solar irradiation
- Solar position in the sky (all formulas)
- Shading Path, Sun rise and sunset, solar time clock time

Lecture 13: Solar Insolation Components and Measurement

- chapter 4 (section 4.1 through 4.13)
- Direct beam radiation and beam radiation on a panel
- Diffused, Reflected Radiation
- Tracking Systems

Lecture 14: PV systems

- chapter 5 (section 5.4 through 5.7, 5.9)
- Equivalent circuit of a PV cell
- PV - iv curves, iv curves, with PV cell in parallel, series and iv curve with resistor connection as load
- Impact of temperature and insolation on iv curves
- Power output of PV arrays, MPPT, Methods to obtain MPP
- PV array design
- PV net metering
- Standard test condition- all parameters
- PV power derate factor(temperature and non temperature related)
- PV performance by peak hours approach
- Annual energy delivered to grid and capacity factor

Lecture 15: *PV* Economics

- chapter 6 (section 6.1 through 6.4)
- Basic PV system costs, capital recovery factor, Annualized costs, annual O&M costs, LCOE, tax incentives

Lecture 16: *PV* Status and Issues

- Basic PV data regarding year 2013
- Largest utility scale farms
- Rooftop solar
- Net metering
- REC
- PV benefits
- Key drivers to PV growth

Don't learn these topics, a basic idea about what they mean is enough

Note: - True False question are there to test your concepts. Thus, in addition to the major topics given above, do go through the lecture slides completely to have a better chance.