

---

## SECTION HEADING

### SOLR 2020: Advanced Photovoltaic Systems

#### Description

Advanced Photovoltaic Systems will introduce photovoltaic (PV) systems design, installation, operation, and maintenance for residential and commercial applications. Students will collect and interpret data. They will apply this data to the design and configuration of grid-tied and standalone system designs.

#### Credits

3

#### Prerequisite

ELCO 1110 or ELCO 1100 (Minimum grade: 2.0 GPA equivalent) or above

#### Corequisite

None

#### Topics to be Covered

1. Introduction to the installation of a Photovoltaic (PV) Systems.
2. PV systems components & configurations for installation.
3. PV system permitting, inspection, and commissioning.

#### Learning Outcomes

1. Describe the purposes of the major components in PV systems.
2. Identify the relationships between PV cells, modules, and arrays.
3. Describe how array orientations can maximize the solar energy gain on modules.
4. Demonstrate how solar radiation and climate data are used in sizing and estimating performance for PV systems.
5. Calculate the size and configuration of the battery bank based on system requirements and charge controller.
6. Identify the appropriate types of conductors for PV system circuits based on application and environment.
7. Describe the common requirements for permit applications.
8. Describe the labeling requirements for PV system components and configurations.
- 9.
- 10.
- 11.

#### Credit Details

Lecture: 3

Lab: 0

OJT: 0

MnTC Goal Area(s): None