

Photovoltaic (PV) and Energy Storage for Engineers

DAY 1

Markets and Applications Common types of Photovoltaic (PV) System Applications Key contributions to the development of technology Grid-connected Photovoltaic (PV) Grid-connected Photovoltaic (PV) with Batteries Stand-alone Systems Microgrids with Photovoltaic (PV) DAY 2 Photovoltaic (PV) Electricity Basics and Safety Basics Solar Power vs. Solar Energy Multimeters: Measuring Photovoltaic (PV) Voltage, Current, and Resistance Maximum power point tracking and IV (current/voltage) curves Generation, Transmission, and Distribution Personal Protective Equipment (PPE) and Fall Protection Shock Prevention DAY 3 Irradiance, Irradiation, Insolation, Peak Sun Hours and AC Energy Sun paths, Solar Time, and Latitudes Shading and Inter-row Spacing Global, Diffuse, Direct, Albedo Solar Radiation, Pyranometers, and Pyrheliometers Photovoltaic (PV) Cells, Modules, Panels, and Arrays Silicon and Thin Film Technologies DAY 4 System Components and Photovoltaic (PV) System Sizing Inverters, Islanding, and Anti-islanding Optimizers (DC-to-DC converters) Balance of Systems String Sizing (Temperature Voltage Calculations)



Calculating Annual Energy Production Sizing Grid-connected and Battery Photovoltaic (PV) systems DAY 5 Electrical and Mechanical Design, and Operations & Maintenance Photovoltaic (PV) System Single and Three-line Diagrams Photovoltaic (PV) to Inverter Ratios, Clipping, and Batteries Racking Systems without and with Tracking Piles, Earth Screws, Ballasts and Roofing Attachments Cleaning Photovoltaic (PV) Systems in Different Climates Operations & Maintenance Best Practices including IV Curve Tracing and Monitoring