

ADVANCED SOLAR TECHNOLOGY AND DESIGN

CLASS OUTLINE:

Introduction

- Present and future of solar energy technologies.
- Units review: Current, Voltage, Power, Ohms law, Irradiance, etc.
- Different PV systems technologies. (residential and commercial)
- Safety requirements and considerations. (OSHA)
- Introduction of NEC (National Electrical Code)

Design Preparation

- Residential site survey.
- Structural considerations.(roof strength, inclination, age, etc.)
- Design considerations approach.
- Wind load considerations.
- Structural load considerations.
- Structural complications.

System Design

- Designing the project.
- Selecting the right materials for the right job.
- Different mounting systems and attaching methods.
- Wind load and structural calculations.
- Considering local building and electrical requirements.
- Electrical design approach.(NEC article 690)
- System sizing and efficiency considerations.
- Selecting the right module.
- Selecting and sizing the inverter.
- System design using on-line tools.
- NEC and electric design.
- UL listing and PV design.
- Interconnection point.
- Commissioning the system.
- Trouble shooting.

Other Issues

- Good working ethics
- Net metering in the US
- Local grid requirements.
- Permitting and applications
- System cost and pay back