950-SPF1
SOLAR PV INSTALLATION LEARNING SYSTEM

MODULE 1 WIRE SELECTION AND SIZING

SEGMENT 1	**MAXIMUM CIRCUIT VOLTAGE CONDITIONS**
OBJECTIVE 1	Explain the NEC code terminology for each part of the PV system
SKILL 1	Identify parts of a PV system
OBJECTIVE 2	Describe how to calculate the maximum PV circuit voltage
SKILL 2	Calculate the maximum PV circuit voltage
SEGMENT 2	**MAXIMUM CIRCUIT CURRENT CONDITIONS**
OBJECTIVE 3	Describe how to calculate the maximum PV circuit current
SKILL 3	Calculate the maximum PV circuit currents
SEGMENT 3	**WIRE SELECTION AND SIZING**
OBJECTIVE 4	Describe the types of wire used in PV circuits
OBJECTIVE 5	Describe how to size wire for a PV circuit
SKILL 4	Size wire for a PV circuit
OBJECTIVE 6	Describe how to select wire color for a PV circuit

MODULE 2 GROUND AND LIGHTNING PROTECTION

SEGMENT 1	**GROUNDING SYSTEMS**
OBJECTIVE 1	Describe the operation of PV system grounding
OBJECTIVE 2	Describe the construction of PV system grounding
OBJECTIVE 3	Describe the operation of PV array ground-fault protection device
SKILL 1	Select and install a grounding system for a PV system
SEGMENT 2	**LIGHTNING AND SURGE PROTECTION**
OBJECTIVE 4	Describe the operation of PV system grounding
OBJECTIVE 5	Describe the operation of surge arrestors
SKILL 2	Install a surge arrestor for a given PV system
OBJECTIVE 6	Describe how to install a surge arrestor for a PV circuit

MODULE 3 INSTALLATION

SEGMENT 1	**INSTALLATION OVERVIEW**
OBJECTIVE 1	Describe the safety rules of PV installation
OBJECTIVE 2	Describe how to draw 1-line and 3-line PV circuit diagrams
SKILL 1	Draw 1-line and 3-line PV circuit diagram
SEGMENT 2	**MECHANICAL INSTALLATION**
OBJECTIVE 3	Describe the types of array mounting methods
OBJECTIVE 4	Describe the methods of securing PV arrays to structures
OBJECTIVE 5	Describe methods of weathersealing PV array mounting structures.
SKILL 2	Assemble a PV array and mounting system
SEGMENT 3	**ELECTRICAL INSTALLATION**
OBJECTIVE 6	Explain how to install a battery bank
OBJECTIVE 7	Describe how to route conductors in a PV system
SKILL 3	Install conductors in a PV system

MODULE 4 STARTUP AND COMMISSIONING

SEGMENT 1	**FINAL INSTALLATION STEPS**
OBJECTIVE 1	List the interconnection codes and standards for grid connection
OBJECTIVE 2	Describe the process for getting approval for grid connection
OBJECTIVE 3	Describe the guidelines for labeling PV system components
SKILL 1	Select appropriate labels for PV system components
SEGMENT 2	**CHECKOUT AND STARTUP**
OBJECTIVE 4	Explain how to perform a pre-startup PV system checkout
SKILL 2	Perform pre-startup PV system checkout
OBJECTIVE 5	Explain how to perform an initial startup on stand-alone PV system
SKILL 3	Perform an initial startup on a PV system
SEGMENT 3	**INTERACTIVE PV SYSTEM INSTALLATION**
OBJECTIVE 6	Describe how to tie a PV system to the utility grid
SKILL 4	Tie an interactive PV system into the grid