

# PHOTOVOLTAICS/2 (90 Hours)

Course No.: 72-65-60

## COMPETENCY CHECKLIST

Student Name \_\_\_\_\_

Teacher Name \_\_\_\_\_ School Site \_\_\_\_\_

Start Date \_\_\_\_\_ Completion Date \_\_\_\_\_ Certificate Date \_\_\_\_\_

Teacher Signature \_\_\_\_\_ Student Signature \_\_\_\_\_

(Signatures verify completion of course competencies)

### A. INTRODUCTION AND SAFETY (3 hrs)

- \_\_\_\_\_ 1. Scope and purpose of course
- \_\_\_\_\_ 2. Overall course content
- \_\_\_\_\_ 3. Classroom policies and procedures
- \_\_\_\_\_ 4. Different occupations in industry sector
- \_\_\_\_\_ 5. Promoting gender equity in non-trad. jobs
- \_\_\_\_\_ 6. EPA legislation on industry sector practices
- \_\_\_\_\_ 7. Procedures for hazardous waste disposal
- \_\_\_\_\_ 8. NEC role in safe working conditions
- \_\_\_\_\_ 9. MSDS as it applies to the photovoltaic field
- \_\_\_\_\_ 10. Role of LEED in clean/renewable technology
- \_\_\_\_\_ 11. City of LA Building & Safety Codes
- \_\_\_\_\_ 12. CA Title 24 as it relates to industry
- \_\_\_\_\_ 13. First aid/emergency procedures
- \_\_\_\_\_ 14. Cal/OSHA laws & photovoltaic installers
- \_\_\_\_\_ 15. Responsibilities to insure a safe workplace
- \_\_\_\_\_ 16. Safety Test

### B. RESOURCE MANAGEMENT REVIEW (1 hr)

- \_\_\_\_\_ 1. Terms related to resource management
- \_\_\_\_\_ 2. Importance of proper resource management
- \_\_\_\_\_ 3. Examples of effective resource management
- \_\_\_\_\_ 4. Benefits of effective resource management
- \_\_\_\_\_ 5. Economic/environmental benefits/ liabilities

### C. TRADE MATHEMATICS REVIEW (3 hrs)

- \_\_\_\_\_ 1. Practical applications of math in PV field
- \_\_\_\_\_ 2. Solve problems using whole numbers
- \_\_\_\_\_ 3. Solve problems using fractions
- \_\_\_\_\_ 4. Solve problems using decimals
- \_\_\_\_\_ 5. Changing fractions to decimals
- \_\_\_\_\_ 6. Changing decimals to fractions
- \_\_\_\_\_ 7. English /metric systems of measuring length
- \_\_\_\_\_ 8. English/metric systems of measuring weight

- \_\_\_\_\_ 9. English & metric measuring volume/capacity
- \_\_\_\_\_ 10. Solve problems involving measurement
- \_\_\_\_\_ 11. Measuring using tools common to the trade
- \_\_\_\_\_ 12. Ascending & descending powers of 10
- \_\_\_\_\_ 13. English numbering system to metric system
- \_\_\_\_\_ 14. Metric system to English numbering system
- \_\_\_\_\_ 15. Square roots of English numbers
- \_\_\_\_\_ 16. Solving geometric problems
- \_\_\_\_\_ 17. Solving algebraic problems
- \_\_\_\_\_ 18. Solve problems using percentages
- \_\_\_\_\_ 19. Reading and interpreting graphs
- \_\_\_\_\_ 20. Techniques for using a calculator

### D. PV SYSTEM HARDWARE & COMPONENTS (15 hrs)

- \_\_\_\_\_ 1. Features/functions of PV systems components
- \_\_\_\_\_ 2. Considerations when mounting PV systems
- \_\_\_\_\_ 3. Hardware for various PV mounting techniques
- \_\_\_\_\_ 4. Module cell temp & environmental conditions
- \_\_\_\_\_ 5. Importance of listed PV components
- \_\_\_\_\_ 6. Mounting positions for flat-plate PV panels
- \_\_\_\_\_ 7. Define services/prices/rebates/tax incentives
- \_\_\_\_\_ 8. Features/functions of assembly systems
- \_\_\_\_\_ 9. PV hardware and key component specs
- \_\_\_\_\_ 10. Features/functions of system electrical designs
- \_\_\_\_\_ 11. PV electrical designs from diff. manufacturers

### E. SITE ASSESSMENT (20 hrs)

- \_\_\_\_\_ 1. Tools/equipment to conduct site survey
- \_\_\_\_\_ 2. Suitable location for PV array & components

### F. PV SYSTEM SIZE, COST, AND SELECTION (25 hrs)

- \_\_\_\_\_ 1. Important service consideration/calculation
- \_\_\_\_\_ 2. Design based on a site assessment
- \_\_\_\_\_ 3. PV owners-residential/commercial/grid sites

\_\_\_\_\_ 4. Analyze demand, estimate power & set-up costs

**G. MECHANICAL DESIGN ADAPTATION (20 hrs)**

- \_\_\_\_\_ 1. Define mechanical design terms
- \_\_\_\_\_ 2. Important determinations of PV installation
- \_\_\_\_\_ 3. Row spacing of tilted modules & sun angle
- \_\_\_\_\_ 4. Potential mechanical loads on a PV array
- \_\_\_\_\_ 5. System weight & support requirements
- \_\_\_\_\_ 6. Amorphous vs. crystalline modules criteria
- \_\_\_\_\_ 7. Design considerations of thin film & BIPV
- \_\_\_\_\_ 8. Proper mounting for various roof/wall surfaces
- \_\_\_\_\_ 9. Project for a potential client

**H. EMPLOYABILITY SKILLS REVIEW (3 hrs)**

- \_\_\_\_\_ 1. Employer requirements in employee
- \_\_\_\_\_ 2. Update the list of potential employers
- \_\_\_\_\_ 3. Role of social networking in job search
- \_\_\_\_\_ 4. Update sample resumes & cover letters
- \_\_\_\_\_ 5. Fill out job app. legibly w/accurate info
- \_\_\_\_\_ 6. Common mistakes made on applications
- \_\_\_\_\_ 7. Complete sample job app. forms correctly
- \_\_\_\_\_ 8. Importance of enthusiasm on a job
- \_\_\_\_\_ 9. Appropriate appearance on a job
- \_\_\_\_\_ 10. Continuous upgrading of job skills
- \_\_\_\_\_ 11. Customer service to build business
- \_\_\_\_\_ 12. Appropriate interview techniques
- \_\_\_\_\_ 12. Materials needed for a successful interview
- \_\_\_\_\_ 14. Update sample follow-up letters
- \_\_\_\_\_ 15. Appropriate follow-up procedures