

# Kennebec Valley Community College

## Professional Development Energy Services Programs

### Course Syllabus

#### SP1 020 Solar PV Design and Installation (Hybrid)

Course Title: Solar PV Design and Installation Course Number: SP1 020

Online Contact Hours: 8

Onsite Contact Hours: 32

Instructors: Keven Vachon and Rich Roughgarden

Office Hours: by Appointment

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#### Course Description

This hybrid course will cover advanced principles of solar photovoltaic (PV) technology of utility grid-tie systems. Students receive online and onsite instruction in topics consistent with the [NABCEP Solar PV Installation Professional Job Task Analysis](#) (JTA). Percentage of time spent on course topics, and the weight placed on assessments match the percentage of examination questions established by NABCEP's JTA. Online subject matter will focus on the knowledge base required to properly design and install solar PV systems. This knowledge base will be refined and reinforced with design and installation lab activities during the subsequent four day onsite training.

Topical Outline:

1. Verify System Design (30%)
2. Managing the Project (17%)
3. Installing Electrical Components (22%)
4. Installing Mechanical Components (8%)
5. Complete System Installation (12%)
6. Maintenance & Troubleshooting (11%)

Note: It is the nature of online courses to allow flexibility for students to take as much time as desired to learn the course content. Actual online contact time will vary for different students.

#### Audience

This hybrid course is designed for technical professionals who are interested in installing, servicing, and designing solar PV systems. This course will provide training for installers who wish to pursue NABCEP Solar PV Installation Professional Certification. The target candidate for NABCEP installer certification is the person responsible for the system installation (e.g., contractor, foreman, supervisor, or journeyman). The NABCEP Installer Exam is offered twice a year at regional testing centers and must be

scheduled through NABCEP. It is highly recommended that all students have taken the Solar PV for the Entry Level Candidate Course as this pre-existing knowledge base is expected.

## Prerequisites

Any one or more of the following

- Apprentice, Journeyman, Master or Technician License
- NABCEP Entry Level Solar PV recognition
- Employed by company involved in the installation of solar PV systems
- Two or Four Year Degree
- Professional license in engineering or architecture
- Two years of experience installing two Solar PV systems per year
- Three years of experience in a government or trade union approved apprentice program with training relevant to installing Solar PV systems
- Acceptance for the NABCEP Solar PV Installation Professional Exam
- NABCEP Certified Solar Heating Installer

## Text and Materials

Text – Materials	Provided Pre-Course	Provided Onsite	Provided By Student
Photovoltaic Systems Manual by Jim Dunlop		X	
Hand tools/hard hat			X
SP1 020 Course Syllabus	X		
SP1 020 Course Schedule	X		
NABCEP Solar PV Job Task Analysis	X		
Course Lab book		X	
Laptop Computer		X	X
Scientific Calculator		X	X
Notebook			X

**Course costs DO include:** meals/snacks and textbooks/materials.

**Course costs DO NOT include:** optional reference manuals, tools and equipment

## Course Outcomes

- Certificate of Course Completion
- 40 NABCEP Qualified Advanced Training Hours
- 40 Contact Hours

## Onsite Course Schedule

Four Day Classes 8 Hours Each

- 8-8:30 a.m.
- 8:30-10:15 a.m.
- 10:15-10:30 a.m.
- 10:30-12:00 p.m. to 12-12:30 p.m.
- 12:30-2:30 p.m.
- 2:30-2:45 p.m.
- 2:45-5:00 p.m.

## Learning Objectives

Universal Learning Objectives: Each subtask priority level is outlined in [NABCEP's Solar PV Installation Professional JTA](#). It is expected that students will be familiar with and capable of executing all tasks described as CRITICAL. It is expected that students will be familiar with all tasks described as IMPORTANT. Tasks described as USEFULL are mentioned to broaden the student's knowledge base.

## Online Course Assessments

Case study examples and sample NABCEP test questions will be presented in the online portion. During the four day "onsite" there will be sample math calculations discussed to prepare the student for the test.

## Modifications

Students will help with the continued improvement of this online course by completing:

- KVCC Course Evaluation

## Students with Disabilities

In accordance with state and federal law, this College is committed to assisting qualified students with disabilities achieve their educational goals.

If you are in need of an accommodation in this course:

- Students must contact the Dean of Students located in the Enrollment Services Center in the Frye Building, Room 131. The Dean of Students can be reached by calling 453-5019 or by email: [email address]
- Students must provide current, appropriate documentation of their disability.
- Students must make a timely request for accommodation to the Dean of Students.

- Accommodations will not be provided until the faculty member receives a request form for accommodations. This form is created with the Dean of Students and is supported by the documentation of said disability.
- Requests for accommodation must be renewed each semester for each course.

This document is available in enlarged print and on audio tape. Please contact the Dean of Students at 453-5019 or [email address]. More information on Kennebec Valley Community College's ADA Policy can be found online at: KVCC's Website

## Notice of Non-Discrimination

Kennebec Valley Community College does not discriminate on the basis of disability in the admission to, access to, or operation of its programs, services or activities. Students requesting classroom accommodation should be forwarded to the Director of the Marden Center located in King Hall Room 130. The Director of the Marden Center can be reached by calling 453-5084. Students may also be forwarded to the Dean of Students located in the Enrollment Service Center in the Frye Building Room 131. The Dean of Students can be reached by calling 453-5019. Complaints about College decisions related to disability accommodations or discrimination must be forwarded to Affirmative Action Officer and ADA Compliance Officer, located in the Enrollment Services Center, Frye Building Room 129, 92 Western Avenue, Fairfield, ME 04937. Contact information is: 453-5117.