

**Basic Solar Photovoltaic Systems**

**WTSS200**

**Instructors: Brok Thayn**

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**Required Texts:** *- Solar Photovoltaics, 3rd Edition – ATP Publishing*

**Optional Text:** *- National Electric Code 2020*

**Course Description:** Students are introduced to principles of utility interactive PV system operations and design. The course prepares students to conduct site evaluations, prepare basic electrical and mechanical design, select appropriate PV system components, and prepare sample sales presentation to the potential customer. Current NEC codes pertaining to Solar will also be discussed.

**Objective/Outcomes:**

Successful students will be able to do the following:

1. Identify the basic OSHA standards concerning possible hazards frequently seen in Photovoltaic (PV) system installation
2. Explain the general permit and inspection process, including local codes and regulations
3. Demonstrate the different PV system sizing methodologies for existing and future loads
4. Create a sales presentation to include proper site survey, system design, components, pricing, monitoring, and benefits to a potential customer



**Online Course Expectations:** Just as in a traditional class, attendance/participation is key to your success. Set aside time each day or at least several days each week to log in, check for announcements, confirm assignment due dates, complete readings and quizzes. The amount of time you put into the course will relate to the quality of your learning experience. Complete all assignments and turn them in on time using directions provided. Do not procrastinate. You may email questions to your instructors at any time. Please understand they have other responsibilities so their response may not be immediate. Do not wait until right before an assignment is due to inquire about it. Instruction within the course will rely heavily on the selected textbook with additional material provided through PowerPoint presentations or links to articles.

**Lab Requirements:** There will be in-person class sessions scheduled during the course to provide opportunity to review and discuss questions with the Instructor as well as hands-on, experiential learning. Labs will run from 6:00P – 9:00P. Exact dates and locations will be posted on Canvas at the start of class. Participation in these Labs is required and graded as indicated below. If for any reason you are not able to attend a particular night, you must make prior arrangements with the instructor.

**Examinations:** There will be one final examination that will through CANVAS. Students will have 120 minutes to complete the exam which must be submitted by 11:59PM of the assigned due date. Students are encouraged to start early enough to ensure full amount of time can be utilized.

**Grade Percentages:**

3% = Surveys

25% = Lab Attendance/Participation

10% = PowerPoint Quizzes

27% = Quiz/Assignments

35% = Final Examination

**Grading Scale:**

A = 100-94% C = 76-74

A- = 93-90 C- = 73-70

B+ = 89-87 D+ = 69-67

B = 86-84 D = 66-64

B- = 83-80 D- = 63-60

C+ = 79-77 E = Below 60%

**Homework must be submitted through Canvas.**

Accommodations and extensions for homework and quizzes may be granted when discussed with instructors **PRIOR** to the due date.

**COURSE OUTLINE:**

**Module 1:** Surveys, Utah Licensing & NABCEP

**Module** **2:** Working Safely with PV systems; Introduction to PV systems

**Module 3:** Solar Radiation; Energy Efficiency

**Module 4:** System Components & Configurations

**Module** **5:** Site Surveys & Preplanning

**Module 6:** Cells, Modules and Arrays

**Module** **7:** Inverters

**Module 8:** Mechanical Integration

**Module** **9:** Electrical Integration

**Module 10:** Utility Interconnection; Permitting and Inspection

**Module 11:** Utility Interactive System Sizing

**Module 12:** Monitoring; Sales

**Tuition Refund Policy:** This is a non-credit course. In order to receive a tuition refund, the course must be dropped within the first 5 days of the course start date. No refund will be issued after the 5th day.

**Incompletes:** An incomplete is a conditional grade given only in extraordinary cases where a student has completed a major portion of the class but is unable to complete course work due to circumstances beyond their control such as a major illness/injury or a death in the family. Written documentation from your physician will be required.