



Instructor

Mr. Scott Wassermann
Instructor
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Office Hours: MWF 3-4
TR 8-12

Or by appointment

Time and Location

Class: MWF 1:00-2:50pm
Industrial Technology Bldg. rm 103

-and-

<http://sulross.blackboard.com>

Course Description

This course of study is designed to provide the student with an opportunity to achieve a basic knowledge of the fundamental principles of the application, design, installation and operation of grid-tied and stand-alone Solar Photovoltaic (pv) Systems. Students will also participate in lab exercises, including mock installation of different solar pv systems in order to reinforce the knowledge gained in the classroom.

Course Objectives

Using hands on lab exercises, written worksheets, and exams, the student will be able to successfully demonstrate competency in the following objectives upon completion of this course:

1. Identify PV Markets and Applications
2. Safety Basics
3. Electricity Basics
4. Solar Energy Fundamentals
5. PV Module Fundamentals
6. System Components
7. PV System Sizing Principles
8. PV System Electrical Design
9. PV System Mechanical Design
10. Performance Analysis, Maintenance and Troubleshooting

The primary goal of this course is to prepare students for the successful completion of the entry level NABCEP exam.

Students will gain a working knowledge of the Photovoltaics industry as it relates to the common use, and installation of a variety of solar modules.

Students will also gain a basic introduction to the function and use of electricity and solar energy

as they relate to the function of solar cells and the additional system components that relate to the functioning of a solar system.

Finally, students will learn the essential considerations in designing and installing all necessary components of the system and the basic maintenance and troubleshooting for these components.

Reading

The text is required for this course is:

Solar Electric Handbook-PV Fundamentals and Applications by Solar Energy International. Published by Pearson Learning Solutions. (2013)

There will also be some reading material in the form of handouts that contain additional information. Students will be responsible for that information on tests and quizzes.

Accessibility:

Sul Ross State University is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is the student's responsibility to initiate a request for accessibility services. Students seeking accessibility services must contact Mary Schwartze in Counseling and Accessibility Services, Ferguson Hall, Room 112. The mailing address is P.O. Box C-171, Sul Ross State University, Alpine, Texas 79832. Telephone: 432-837-8203.

Attendance

Attendance will be taken each scheduled class period in accordance with University and Departmental Policy and will count as part of the daily work grade. After 9 hours of absences the instructor will drop a student from the course with a grade of 'F', in accordance with the Student Handbook. Attendance will be taken at the beginning of each class period. **If you are tardy and miss the roll call you will be charged with one absence.**

Class Structure

This course is designed to be a guided study and not just dissemination of information. Class will be run in a lecture/discussion format with demonstrations and laboratory experiences included. Lectures will be minimal and will utilize overhead slides, power point projections, demonstrations, slides, and videos. The lectures will be given primarily to enhance and answer questions about the **material that should have been studied prior to the class period**, and in preparation for the activities that will be completed in the labs. There may be some step-by-step guided practice and individual assistance during the scheduled class time. Students are expected to study, read, practice, and use problem solving skills to discern and apply the information assigned. It is essential that everyone be in attendance for the scheduled meetings so questions are answered and the shared information and demonstrations are not missed. Several of the scheduled class times may be scheduled as research time and/or lab time. It is important that plans are made to work in the lab outside scheduled class time.

Time Commitment

Students should be prepared to spend 4-6 hours per week outside of class on assignments that will include: Homework, Reading Assignments, Lab work and studying for tests and quizzes.

Phones & Electronic Devices

No electronic devices other than calculators are allowed in the class or lab.

Assignments

Daily work will consist of reading, worksheet pages, building in the lab, lab record sheets. Daily work and lab activities must be completed in preparation for classroom discussions and tests.

Grades

Grades will be earned on the basis that "C" is average work, "B" is good work, and "A" is excellent work. Grades will be based on written examinations, research projects, lab work, and daily activities. **If any work is left undone** a grade of 'C' will be the highest possible grade awarded regardless of grades received on individual work assignments turned in. Barring extraordinary circumstances, there will be no "Incomplete" grades assigned.

Grading Scale

A = 90-100% B = 80-89% C = 70-79%

D = 60-69% F = below 60%

Academic Honesty

All students are expected to do their own work at all times. Any dishonest conduct will be promptly rewarded with an immediate "F".

Lab Time

There will be required lab work in this course. The lab will be open for use during normal business hours (usually 8 - 5 daily). The lab may be open some evenings as well when the lab assistant schedules are complete. No one will be left in the building without a lab assistant.

Equipment and Supplies

Most of the equipment needed for this course and lab work will be supplied through the department.

Storage

The lockers in the hallway may be checked out and used for storing your equipment and supplies. These lockers must be signed out with the secretary in the IT main office. You must supply your own lock.

Quizzes

Everything we discuss and in the assigned reading, including laboratory material is fair game for quizzes. You will not be given notice for quizzes. They will be primarily written in nature, but may include practical components. There will be no make-up quizzes.

Tests

Everything we discuss and in the assigned reading, including laboratory material is fair game for tests. You will be given notice for all unit tests. They will be primarily written in nature covering terminology, but you can expect some practical exercise portions on each exam. Makeup tests will not be given, although tests will be administered early in case of a planned absence (sports, etc.).

Final Exam

The final exam will be held as scheduled during the week of final exams Monday December 7 at 12:30.

NABCEP Certification

The design of this course is based on the North American Board Certified Energy Practitioner (NABCEP) job task analysis for an entry level PC installer.

IT 2315 Solar Photovoltaics
Fall 2015

Tentative Assignment and Test Schedule

The following is a tentative test schedule for the semester. The dates provided are the dates the test will be given. The tests will not necessarily be the only scheduled events for the day – there should be some time for lab work as well.

Date	Topic/Learning Experience	Reading/Due
Week 1 Aug 24-28	<ul style="list-style-type: none"> • Overview of Renewable Energy and the Solar Industry 	
Week 2 Aug 31-Sep 4	<ul style="list-style-type: none"> • Electricity and Components 	
Week 3 Sep 7-11	<ul style="list-style-type: none"> • 	
Week 4 Sep 14-18	<ul style="list-style-type: none"> • Modules • Series/Parallel • Meters 	
Week 5 Sep 21-25	<ul style="list-style-type: none"> • 	
Week 6 Sep 28-Oct 2	<ul style="list-style-type: none"> • Solar Site Analysis • Mounting 	
Week 7 Oct 5-9	<ul style="list-style-type: none"> • 	
Week 8 Oct 12-16	<ul style="list-style-type: none"> • Grid Direct System Sizing 	
Week 9 Oct 19-23	<ul style="list-style-type: none"> • 	
Week 10 Oct 26-30	<ul style="list-style-type: none"> • Wiring • Grounding • Overcurrent Protection 	
Week 11 Nov 2-6	<ul style="list-style-type: none"> • 	
Week 12 Nov 9-13	<ul style="list-style-type: none"> • Safely Installing Grid direct systems • Commissioning Grid direct systems 	
Week 13 Nov 16-20	<ul style="list-style-type: none"> • 	
Week 14 Nov 23-27	<ul style="list-style-type: none"> • Battery based systems • Thanksgiving 	
Week 15 Nov 30-Dec 3	<ul style="list-style-type: none"> • 	