

CASPER COLLEGE COURSE SYLLABUS
RETK 1500 Solar Power Systems

Semester/Year: Fall 2015

Lecture Hours: 2

Lab Hours: 0

Credit Hours: 2

Class Time: 6:00-8:00 PM

Days: Thursday

Room: EI 114

Instructor's Name: Mike Malone

**Instructor's Contact
Information:**

Office Phone: 307-268-3124

Home Phone: 307-259-4896

Office Hours: 11-12, 1-3 Tue.
10-12 Wed. 11-12, 1-3 Thur.
or by appointment

Email: mmalone@caspercollege.edu

Course Description:

This course will introduce students to the basic concepts of various active and passive solar energy conversion technologies as they relate to other renewable energy technologies.

Statement of Prerequisites:

Program Goals:

The Renewable Energy Technology program is a versatile, interdisciplinary program that offers students the opportunity to become trained in variety of technologies. The core of the program is centered on electrical power generation from wind and solar. The program assembled produces graduates trained as instrumentation and control technicians that have a high level of mechanical skills as well as specific skills in wind and solar installations. The program allows for electives in related disciplines such as construction, business, Geographical Information Systems (GIS) and information technology. All included, small wind turbines and residential solar installations for students seeking small scale renewable energy skills.

Course Goals:

To introduce students to active and passive solar energy concepts and conversion technologies

Outcomes:

Upon completion of this course, students should be able to:

1. Demonstrate effective oral and written communication
2. Solve problems using critical thinking and creativity
3. Use appropriate technology and information to conduct research
4. Describe the value of personal, civic, and social responsibilities
5. Use quantitative analytical skills to evaluate and process numerical data
6. Identify passive solar technologies
7. Identify active solar technologies
8. Describe the applications of passive solar technologies in residential and commercial applications

9. Describe the applications of active solar technologies in residential and commercial applications
10. Explain how active and passive solar technologies contribute to energy management in residential and commercial applications

Methodology:

Lectures will present the basic theory. Students will be required to submit a design of a solar system. Field trips to existing solar applications will enhance student understanding of integrated solar energy systems. Demonstration of various photovoltaic systems will provide understanding of principles of design and function.

Sessions are a combination of lecture, experiential activities and team exercises, and are based on a design philosophy that emphasizes the utilization of:

- Detailed lesson plans
- Interactive classroom activities
- Real-world examples
- Team activities
- Repetition of concepts to ensure retention
- Regular homework assignments
- High student performance expectations

Evaluation Criteria:

Attendance/Participation	10%
Assignments	20%
Projects, etc.	20%
<u>Exams</u>	<u>50%</u>
	100%

Grading Policy:

A	=	90-100%
B	=	80-89%
C	=	70-79%
D	=	60-69%
F	=	Less than 60%

Class Policies: Last Date to Change to Audit Status or to Withdraw with a W Grade:

Last Date to Change to Audit Status or to withdraw with a W Grade is Nov 12th, 2015

Attendance at each class is required and there will be a strong correlation between class attendance and the final course grade. Each student is responsible for the materials provided during lecture. It is each student's responsibility alone to acquire lecture notes, handouts and exercise for missed classes. Excused absences must be cleared with the course instructor so arrangements can be made. Makeup exams may be given depending on the reason, the status of the student's class participation, and attendance.

Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.

Student Rights and Responsibilities: Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

Chain of Command: If you have any problems with this class, you should first contact the instructor to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department

Head/Program Director, the Dean, and lastly the Vice President for Academic Affairs.

Academic Dishonesty: (Cheating & Plagiarism) Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct for more information on this topic.

Official Means of Communication: Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly. This is also, where you will find course evaluation links during course evaluation periods.

ADA Accommodations Policy: If you need academic accommodations because of a disability, please inform me as soon as possible. See me privately after class, or during my office hours. To request academic accommodations, students must first consult with the college's Disability Services Counselor located in the Gateway Building, Room 344, (307) 268-2557, bheuer@caspercollege.edu. The Disability Services Counselor is responsible for reviewing documentation provided by students requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.

Calendar or schedule indicating course content:

Week	Topic
1	Introduction
2	Introduction to Photovoltaic Systems
3	Solar Radiation
4	Site Surveys and Preplanning
5	Test 1
6	System Components and Configurations
7	Cells, Modules, and Arrays
8	Batteries
9	Charge Controllers
10	Test 2
11	Inverters
12	System Sizing
13	Mechanical Integration
14	Electrical Integration
15	Utility Interconnection
16	Economic Analysis
Final	As Scheduled

