COURSES

ALTERNATIVE ENERGY

AE177 Energy Efficiency **3.0 UNITS**
Want to learn how to lower your utility bills? You will gain a fundamental understanding of energy conservation, energy efficiency, and energy auditing. You will also apply techniques including the utilization of a solar photovoltaic array and/or wind turbine that will not only reduce the customer's utility bill but your own!

AE178 AG/Rural Wind Applications **3.0 UNITS**
Produce your own wind on the farm! You will learn practical field applications through the usage of small wind turbines which supply electrical needs to many rural environments in the United States and throughout the world! An intensive, all-day, Saturday boot camp is strongly encouraged as part of this course. If you are unable to attend, an alternative assignment can be approved by your instructor. Industry experts are on-site to help with the instruction process and will give you the necessary skills to become a successful technician.

AE179 Community Wind **3.0 UNITS**
Become an emerging leader in your community! Learn the economics of incorporating community wind technology to reduce utility expenses for groups, organizations, or single entities. You will gain the skills necessary to properly size turbines and match the customer's electrical load to the required number of turbines. An intensive, all-day, Saturday boot camp is strongly encouraged as part of this course. If you are unable to attend, an alternative assignment can be approved by your instructor. Industry experts are on-site to help you gain the necessary skills to become a successful technician.

AE180 Wind/Solar PV Hybrid Systems **3.0 UNITS**
Solar and wind go together like bread and butter! When the sun goes down the wind blows more. This is the perfect marriage. You will learn to install hybrid, grid-direct systems. Additionally, exposure to battery-based hybrid systems will be explored. You will learn to incorporate all the systems into an overall renewable energy plan. An intensive, all-day, Saturday boot camp is strongly encouraged as part of this course. If you are unable to attend, an alternative assignment can be approved by your instructor. Industry experts are on-site to help with the instruction process to give you the necessary skills to become a successful technician.

AE181 Small Wind Turbine **3.0 UNITS**
Do you have the desire to learn how to install a small wind turbine? This class is for you! You will install, test, and troubleshoot a small wind turbine and will be exposed to both gird-direct and off-grid systems throughout this course. Site analysis for safety and maintenance will be a focus along with sizing types for towers and installation. Come away with the essential steps toward a successful wind electric system. An intensive, all-day, Saturday boot camp is strongly encouraged as part of this course. If you are unable to attend, an alternative assignment can be approved by your instructor. Industry experts are on-site to help with the instruction process to give you the necessary skills to become a successful technician.

AE182 Drones in Renewable Energy **3.0 UNITS**
This course will enable the student to fly a drone for a solar or wind site survey. The student will apply different flight techniques to capture the ideal photographs. This course will allow students to apply the theoretical knowledge in the course with a practical hands-on experience at the Boot Camp. (offered spring semester)

AE183 Wind, Battery-Based **3.0 UNITS**
This course will enable the student to install, test, and commission different wind turbine systems. The student will apply different battery wiring techniques to achieve the correct battery bank voltage and capacity required for the different turbine they will be installing. This course will allow students to apply the theoretical knowledge in the course with a practical hands-on experience at the Boot Camp or lab days. (Offered spring semester)

AE190 Electronics **3.0 UNITS**
Power. Current. Voltage. Resistance. What does all of this mean? You will learn the basic electrical principles and laws associated with the electronics used in the field. The application of electrical fundamentals is an important component of both wind and solar PV systems. Additionally, there will be extensive coverage of charge controllers, inverters, grounding and bonding, and lock-out, tag-out requirements.

AE199 Introduction to Construction **4.0 UNITS**
Let the wind blow you into learning the components of construction! You will gain the necessary knowledge in the basic construction of wind and PV systems. Also, you will explore the fundamentals necessary to advance in different areas in the industry such as Solar Photovoltaic Systems Installer, Wind Turbine Maintenance Technician, and many more majors in the construction industry.

AE200 Solar PV Battery-Based **3.0 UNITS**
Tired of paying Uncle Sam? You will learn how to install a battery bank for multiple systems and will also learn about grid-tie with battery backup systems. You will wire and test battery banks to determine the correct voltage and capacity on each system and will gain real-word, hands-on experience with a multi-meter and other necessary tools. An intensive, all-day, Saturday boot camp is strongly encouraged as part of this course. If you are unable to attend, an alternative assignment can be approved by your instructor. Industry experts are on-site to help with the instruction process to give you the necessary skills to become a successful technician.

AE201 Solar PV Technical Sales **3.0 UNITS**
Can I interest you in buying a solar PV system? Find out what it takes to enter the solar PV industry. You will explore the solar business and financial aspects of the PV world. Exposure to marketing, sales, electrical savings rates, incentive structures, and financial benefits and options are a necessary part of this course. An intensive, all-day, Saturday boot camp is strongly encouraged as part of this course. If you are unable to attend, an alternative assignment can be approved by your instructor. Industry experts are on-site to help with the instruction process to give you the necessary skills to become a successful technician.

AE241 Power Storage/Transmission & Conversion **3.0 UNITS**
How does that work? You will gain knowledge of the battery-based system through wiring batteries and inverters. You will set up equipment in multiple configurations including series, parallel, and series-parallel. Strong emphasis is placed on performing basic calculations of voltage, wattage, amp-hours and watt-hours, and testing the components utilizing a multi-meter. You will explore, in depth, the safety and maintenance of the installation processes. An intensive, all-day, Saturday boot camp is strongly encouraged as part of this course. If you are unable to attend, an alternative assignment can be approved by your instructor. Industry experts are on-site to help with the instruction process to give you the necessary skills to become a successful technician.

AE276 Introduction to Energy Technologies 3.0 UNITS
Which side of the energy debate are you on? You will increase your knowledge to solidify your argument by learning about technologies such as biomass, biofuels, nuclear power, wind power, and hydro. You will practice on both stand-alone and grid-tied photovoltaic and wind turbine systems and will become certified in CPR/First Aid and OSHA-10 through our hands-on one-day boot camp. An intensive, all-day, Saturday boot camp is strongly encouraged as part of this course. If you are unable to attend, an alternative assignment can be approved by your instructor. Industry experts are on-site to help with the instruction process to give you the necessary skills to become a successful technician.

AE277 Solar PV Fundamentals and Applications 3.0 UNITS
Do you want to learn how to work on a solar PV system using standard industry tools such as a Solar Path Finder, angle finder, irradiance meter, multi-meter, and a temperature gun? This class is for you! You will acquire the necessary skills to effectively incorporate photovoltaic systems into stand-alone and interconnected electrical systems. You will also explore photovoltaic applications through installation planning, system components, and by preparing proposals. An intensive, all-day, Saturday boot camp is strongly encouraged as part of this course. If you are unable to attend, an alternative assignment can be approved by your instructor. Industry experts are on-site to help with the instruction process to give you the necessary skills to become a successful technician.

AE279 Solar PV Grid Direct 3.0 UNITS
Learn about solar photovoltaic from start to finish! You will explore cells, modules, arrays, batteries, charge controllers, inverters, system sizing, and mechanical integration and will gain hands-on skills through practice using an irradiancemeter, multi-meter, and temperature gun. Installation, troubleshooting, and testing system components will be explored in-depth. An intensive, all-day, Saturday boot camp is strongly encouraged as part of this course. If you are unable to attend, an alternative assignment can be approved by your instructor. Industry experts are on-site to help with the instruction process to give you the necessary skills to become a successful technician.

AE297 Small Wind & Solar PV Installation Prof 5.0 UNITS
You will gain the necessary skills to become a small wind and solar photovoltaic professional. Through real-world hands-on experience, you will install a stand-alone solar PV system, wind system, and hybrid system and by learning to wire, test, and troubleshoot, you will be ready to show off your abilities to those in the industry. An intensive, all-day, Saturday boot camp is strongly encouraged as part of this course. If you are unable to attend, an alternative assignment can be approved by your instructor. Industry experts are on-site to help with the instruction process to give you the necessary skills to become a successful technician.

AE298 Internship 4.0 UNITS
Show off your abilities to those in the industry! You will perform work in the solar photovoltaic and/or the wind turbine industry (or a closeley related field approved by your instructor). You must seek employment with a company to gain experience through 160 hours of training which helps with the process that can lead to permanent placement in the industry.