

LTC Wind Energy Training Center

Preparing people to make a difference in the fastest growing segment of the emerging green economy.

The Program

Wind Energy Technology

Associate Degree – 4 terms, 67 credits

The Wind Energy Technology program at Lakeshore Technical College prepares students to install, test, service and repair wind turbine components; troubleshoot and maintain control and PLC systems; troubleshoot and maintain SCADA systems; wear PPE for climbing and identify safety practices for climbing; and practice safe wind turbine tower climbing skills.

This program prepares students for work as a wind turbine technician, mechanic or tower climber; installation technician; operation and maintenance technician; or wind farm maintenance manager.

Students must be able to see with normal or corrected vision, hear with normal or corrected hearing, lift up to 50 pounds, stand for long periods of time, work outside in various climate conditions, walk and climb towers of 270 feet, have manual dexterity and have strong communication skills.

Required Classes

- Electro-mechanical Systems
- Hydraulics I & II
- Industrial Controls and Motors
- Intro to Wind Systems
- Programmable Controllers-Allen Bradley
- Wind System Technician I & II
- Industry-sponsored Internship

The Wind Energy Technology program shares 14 common classes with the Electro-Mechanical Technology Associate Degree program. Students in the Electro-Mechanical Technology program attain the base knowledge necessary to make the application in the wind industry.

Advisory Committee

The following individuals assist LTC in setting a vision for the Wind Energy Technology program as members of the program advisory committee: Mark Behrens, Snap-on Industrial; Doug Bishop, Crane Creek Wind Farm/Wisconsin Public Service; Curt Bjurlin, EcoEnergy; Karsten Brueggem, Nordex; John Cichosz, Wind Access Engineering; Mike Collins, Invenergy; Ken Drake, Invenergy; Randy Faller, Kettle View Renewable Energy; Deb Full, Energy Maintenance Service; Katrina Gerhart, Alliant Energy; John Hippensteel, Lake Michigan Wind and Sun; Mark Jones, ENSA Access & Rescue; Mike Jones, ENSA Access & Rescue; Alicia Leinberger, Seventh Generation Energy Systems; Randy Mchugh, Ingeteam; Dave Miller, Wave Wind; Laura Miner, Invenergy; Barry Morris, Airstreams Renewables; Mark Noah, Blue Sky Green Field/We Energies; Art Ondrejka, Vestas; and Robert Siegel, ENSA Access & Rescue.



Meet Our Staff



Doug Lindsey, Dean of Trade & Industry, Agriculture and Apprenticeship

Doug began work at LTC in 1985 as an instructor in the Dairy Herd Management program. He has been a dean at the college since 1994, and has extensive experience in program development and grant administration.

Doug is a board member for the Midwest Renewable Energy Association and program participant with We Energies Energy Partner. He also played a key role in hosting the first WTCS Renewable Energy Summit in 2005.

Doug is a recipient of the 1986 WTCS Service Excellence Program Award, the 2005 Interstate Renewable Energy Council Innovation Award and the Chamber of Manitowoc County's 2007 Government-Business Cooperation Award.



Jenny Heinzen, Wind Energy Technology Instructor

Jenny began working at LTC in 2001 as an industrial electrician apprenticeship instructor and has been teaching wind energy courses since 2005.

Jenny serves as a member, exhibitor, instructor and speaker with the Mid-Atlantic Renewable Energy Association and the Midwest Renewable Energy Association; and sits on the Board of Directors for RENEW Wisconsin.

Jenny is a recipient of the 2008 Small Wind Educator of the Year award and the 2006 Innovation Award from the Interstate Renewable Energy Council. Additionally, she was named president of the Executive Committee for RENEW Wisconsin in 2008. In March 2010, she was named to the Wisconsin Public Service Commission Wind Siting Council.



Jim Gruenke, Electro-Mechanical Instructor

Jim joined LTC in 2009 as an Electro-Mechanical instructor. He holds a bachelor's degree in Industrial Technology from the University of Wisconsin-Stout.

Prior to his career in education, Jim spent more than 20 years in manufacturing, developing new manufacturing processes and managing maintenance.



Wade Wittmus, Electro-Mechanical Instructor

Wade started at LTC in December 1999 as an Electro-Mechanical instructor. Before coming to LTC, he spent a number of years at AC-Compressor (now GE Turbines, designing control systems for compressors utilized in the petro/chemical industry. He also has worked as an electrical engineer for RapidPak, which creates high-speed horizontal packaging machines for the food industry.



Bob Latowski, Electro-Mechanical Instructor

Bob has been with LTC as an Electro-Mechanical instructor since 1991. Prior to entering a career in education, he spent nearly two decades working in industry as a plant electrical supervisor and senior designer.

Bob is a member of the National Institute for Certification in Engineering Technologies and the National Association of Power Engineers.



SAFETY

The LTC Rescue Team is a group of six LTC staff members who have been ENSA certified and trained to deliver a set of rescue procedures in the case of an incident at the wind training facilities. The team is connected through a radio system and works as part of the college's internal crisis management system. OSHA requires LTC to have a rescue plan in the case of personal injury, fire or other occurrence.

The LTC Rescue Team includes, from left: Information Technology Instructor Paul Benfield, Industrial Electrical Apprenticeship Instructor David Schwobe, EMS Fire & Emergency Management Coordinator Ryan Skabroud, Public Safety Equipment Technician Gary Van De Loo, Maintenance Mechanic Todd Gibeault and Wind Energy Technology Instructor Jenny Heinzen.



SPECIALIZED TRAINING

ENSA Access & Rescue and Confined Space Entry/Rescue Training

LTC has developed a partnership with ENSA Access & Rescue for wind turbine training in climbing, access, rescue, fall protection and confined space. Through this partnership, LTC instructors have earned certification to teach ENSA wind turbine access and rescue courses, which are included in LTC's Wind Energy Technology program, as well as offered through seminars and contract training.

Instructors Jenny Heinzen and Ryan Skabroud are certified to teach the ENSA WE4001 Wind Turbine Access & Rescue and Confined Space Entry/Rescue course and the WE4001 refresher course. Designed around the specific requirements of the wind energy industry, these courses introduce students to safe work practices for work at height and in confined spaces, as well as the correct use and care of personal safety and rescue equipment. Students also practice specific emergency response procedures for tower, nacelle, hub and blade rescue, and are made aware of workplace dangers.

Upon completion of the courses, students receive ENSA certification cards.

Providing the training to LTC staff is ENSA Director of Operations & Business Development Robert Siegel. In this position, he develops partnerships and alliances within the wind energy industry in order to broaden program offerings and develop more standardized uniformity for training within in the industry.

Rob has been inspecting fall protection and height safety equipment since 1999, consulting with such companies as Caterpillar, Oshkosh Truck and North Safety Products. He is a member of the International Association for Fall Protection, World Safety Organization, International Rope Access Trade Association, Society for Professional Rope Access Technicians and American Wind Energy Association. Rob also sits on the training sub-committee of AWEA's Safety Committee.



Rob Siegel

Snap-on Torque Certification

LTC is in the process of becoming a certification site for Snap-on Torque Certification, an increasingly necessary program for the wind energy industry that covers all aspects of torque — from the basics through master-level skills. As a certification site, LTC will offer a 16-hour torque course to students in the Wind Energy Technology program, as well as to wind farm employees and others. The torque curriculum includes modules on theory, technique, mechanical torque wrenches, electronic torque wrenches, hydraulic torque wrenches, torque multipliers and safety.

10- and 30-Hour OSHA Training

LTC offers both 10- and 30-hour OSHA training for the wind energy industry. The courses were developed for general industry and modified to include terms and equipment pertaining to the wind industry. The courses provide instruction on a variety of safety and health standards to new and experienced safety, health and compliance professionals, as well as personnel who have a wide range of responsibilities, such as human resource managers, supervisors and safety committee members.

DEMONSTRATION

65 kW Vestas

LTC erected its first wind turbine — a 65 kW Vestas — in 2004 on the college's Cleveland campus. In the first five years of operation, the turbine produced more than 220,000 kilowatt-hours of energy. It regularly produces enough energy to consistently power approximately five homes.

Entegrity & Endurance 50 kW Wind Turbines

Two 50 kW Canadian wind turbines of new design and manufacture have been installed and are being monitored at LTC. Parameters of installation costs, annual electrical production, electrical efficiency from wind sources, and maintenance logs will be published in comparison to the Vestas turbine.

The Entegrity EW50 is expected to produce between 75,000 and 91,900 kWh annually. The Endurance E3120 is expected to produce roughly 120,000 kWh annually.

MagDrive Electronic Power Control

MagDrive LLC is developing a new electronic power control used in small and community wind turbines. A 2.5 kW Proven wind turbine will be installed on LTC's campus and monitored to compare parameters between MagDrive's drive-train technologies and existing wind technologies. A MET Tower and anemometer are installed on LTC's campus to collect wind speed data.



Hubs

Two wind turbine hubs have been donated to LTC and positioned at the ground level to be utilized for confined space safety training. The first of these hubs is Vestas equipment. The second is the hub of a decommissioned 1.5 MW General Electric wind turbine — the most widely used turbine in its class.

Nacelle

Training in the nacelle of a decommissioned 1.5 MW General Electric wind turbine allows students to develop maintenance, repair and torque skills at the ground level.

Blade

The blade of a decommissioned 1.5 MW General Electric wind turbine located in New York has been donated to LTC, providing a unique opportunity to move to another level in confined space training. A portion of the blade will be mounted to the GE hub for access between the two parts.

Tower

One 90-foot tower section of a decommissioned 1.5 MW General Electric wind turbine with platform will simulate high-angle rescue training exercises.

Wind Energy Technology Lab

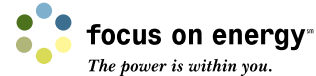
A component of the college's Center for Manufacturing Excellence, the LTC Wind Energy Technology lab is outfitted with state-of-the-art Snap-on tools and workspaces. Large Snap-on work tables allow students to collaborate on projects, and industry-identified tool sets provide for student lab work and projects in wind energy technology.

Mobile Tool Crib

LTC's fully equipped Snap-on mobile tool crib is complete with its own power generator, lighting, cabinetry, shelving, lockers, heating and air conditioning, industry-developed tool kits, and specialized storage.



Support



Our Partners

LTC's partnerships with Snap-on, ENSA, New North, Wisconsin Wind Works, RENEW Wisconsin, Midwest Renewable Energy Association, American Wind Energy Association, We Energies and Focus on Energy:

- Provide new members representing industry on LTC's advisory committees
- Help monitor and assess industry changes and training needs
- Help ensure LTC has proper equipment and operating knowledge
- Connect the college with wind power companies, suppliers and vendors to promote economic developments within the wind manufacturing supply chain in Wisconsin.

A Focus on Energy grant assisted LTC in constructing a 65 kW Vestas wind turbine on the Cleveland campus in 2004. Funds for the implementation and installation of every LTC wind turbine have been provided by Focus on Energy.

LTC partnered with Moraine Park, Gateway, Midstate, MATC-Milwaukee and Blackhawk technical colleges, as well as Snap-on Incorporated, ENSA and Vestas to obtain a nearly \$200,000 U.S. Department of Energy grant aimed at supporting the 20% wind by 2030 scenario.

LTC partnered with MagDrive LLC to write We Energies Renewable Energy Research and Development grant for nearly \$198,000 to support the Innovative Drive Train Design for Small Wind Turbines project. Additional turbine support for this project is provided by Focus on Energy.

We Energies has committed \$250,000 to the Midsized Turbine Demonstration Project, which will allow for the installation and monitoring of two Canadian 50 kW turbines of new design and manufacture at LTC. Additional Focus on Energy funds also were awarded.

LTC partnered with Texas State Technical College and other leading wind colleges to write a \$4.99 million National Science Foundation grant in support of the National Wind Center project.

Who's Hiring Our Graduates

Seventh Generation Energy Systems, Madison
Kettle View Renewable Energy, Random Lake
Lake Michigan Wind & Sun, Sturgeon Bay
Invenergy (Forward Wind Energy Center), Brownsville
Energy Maintenance Service, South Dakota
Gamesa U.S., traveling
NextEra, traveling

Local Industry

Tower Tech Systems, a Manitowoc-based manufacturer of utility-scale wind towers and monopoles for on- and off-shore wind development, specializing in fabricating larger, heavier, next-generation wind towers.

Manitowoc Cranes, a manufacturer of a range of lift cranes, as well as duty-cycle crawler cranes and wheeled cranes for special industrial and marine applications.

Orion Energy Systems, a leading power technology based in Manitowoc that designs, manufactures and deploys energy-efficient technology for commercial and industrial business throughout North America.



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