

Transcript: [Episode 27 / March 22, 2010](#)

Coming up next on ATE TV, lasers and photonics technology.

Everyday there's a new application coming out for lasers, so it is creating a lot of jobs.

Wind energy technology.

The goal is to really provide students with the knowledge and confidence that they need to go out into this industry to be able to do the job.

And the importance of mathematics.

Technology, it all goes back to math.

Now, on ATE TV.

From across the country to your own backyard, ATE TV shows you the many advanced technological education opportunities available at your local community college.

From surgical procedures to working with music and video technology, the uses for lasers are expanding every day. If you have been thinking about a career working with lasers and photonics technologies, but aren't sure how to get started, you might be interested in a program like the one Todd Devine is taking at Central Carolina Community College.

I'm Todd Devine, Central Carolina Community College, Laser and Photonic Engineering program. I have just always liked lasers, so ever since I was little I was tinkering with things and it's just grown from there.

So, we are looking at 474.97 nanometers.

It is changing now to more of a purple and now getting blue, you are getting into an infrared white line at 472.83 nanometers.

I talked to one of the instructors then he told me about the lasers and photonics program. I saw the possibilities that are out there and decided that would probably be the right way for me to go for this time of my life.

We've got it bouncing off mirrors going through a diffraction grating.

The beam into any size and we could do it real small. Just have to bring beam profiles.

Everyday there is a new application coming out for lasers, so it's creating a lot of jobs. Guess what, there is not enough technicians to support those applications in those companies, medical field and telecommunications and all other fields. That's what these people are prepared to do going to those fields.

Where is it going to be shifted to?

It's going to shift downwards.

You need electronics background and study of light to be able to do the job. You have to learn everything from small like atoms all the way to the output of what your eyes can see.

Highest range invisible light and lowest grades of infrared.

When I graduate I think I am going to look more towards the medical fields dealing with lasers and help mankind in some way and something useful for the world.

Todd is headed for a successful career in the medical field and the course he is taking is helping to make that happen. Be sure to visit your local community college for more on the programs they offer in lasers and photonics technology.

Interested in being part of the renewable energy movement, then working with wind turbines might be for you. We are headed to Laramie County Community College in Wyoming to have a look at their wind energy technology program.

Since we have the highest quality wind in the nation, we see a lot of wind farms going up, not only in the Cheyenne area, but also just south of the college here and we decided to capitalize on that and we have seen that there is a great need for technicians.

That was a perfect time to begin a training program in wind energy technology.

At the precision of it relative to the top of the core.

This program is designed to prepare technicians to go into the wind industry to repair utility skill wind turbines. These machines are large commercial machines. They have very complex control systems that allow them to produce energy efficiently and in its maximum capability. So, from that standpoint the technicians that work and repair and service these machines have to be highly skilled.

This is the main accumulator.

We can actually do a check on this.

And they learn all aspects of wind energy technology from introduction to wind to electricity, hydraulics, and all of the basic core skills that are needed.

To go through the calculation of how we are actually going to draw that amount of current through, and how do we get to that full load.

Math and science are very critical. Mathematics specifically apply to the technical part of it. Our technicians have to have an understanding of how power is produced. They have to have an understanding of power quality because this power is ultimately delivered to a utility, ends up on a grid, and then delivered to the consumer.

This would be your pressure gauge for the pump itself.

Much of the equipment that we have was donated one way or another by our industry partners.

What we have is a wind turbine in a cell. It is a Mitsubishi 1-megawatt machine. It was donated to the program. We have situated that in our lab and it's turned into an outstanding training tool. There is nothing that takes the place of actual real world equipment when it comes to training a technician in any field. We are the only program nationally that actually offers a comprehensive climb safety and rescue training program. The goal is to really provide students with the knowledge and confidence that they need to go out into this industry and be able to do the job.

How come we have a resistance difference in the start winding,
because the wire size is smaller.

Most of the students that are in our programs, I would say, over 90-percent of them are interested in a career change. The folks that are coming into this wind energy program are looking at this as something that they see as an important thing for our society and our environment. When my students come to class, people aren't sleeping. They are very focused on what they are learning. These people are excited.

Take this flare off too.

The kind of training that LCCC is giving their students is exactly the training that Duke Energy is looking for in a potential employee.

We also get a lot of good feedback and a lot of interest from other colleges who are wanting to start this program. We are being used as a good example, we're an exemplary program.

Technicians working in renewable energy fields such as wind are helping to build a sustainable energy infrastructure for the country and they're giving back to the environment.

We all know that math plays a major role in any technology career, but did you know that community college is a great place to get up to speed in algebra and calculus. Take a look.

Technology, it all goes back to math. The more you know about math, the better you understand it, the more clear the complex topics that you are going to learn in the future are going to be.

Ten volts peaks 20 volts peak to peak

My handheld calculator.

You have got to calculate power. You have got to calculate storage, so you need to be able to use advanced math skills. A keen interest in math and in science and thinking in logical steps is absolutely relevant for this role.

Those key concepts are really the foundation to build upon all of that knowledge as you work in industry. You are going to need that as those core skills. I know from my own personal experience when I was in school, I was struggling. It was calculus too, I must say which wasn't really like my strong suite, you know, I was struggling, but some topics will be easier than others.

It will all pay off. If you are struggling with math in high school right now, if you just study hard and work through it, it will all payoff.

It is not going to disappear. That is the nice thing about the community college is you can come whether you are out of school for a while or if you had trouble in high school, if you are not up to speed with math, we have remedial classes to bring you up to the college level, so you don't fail.

They work with you, they're not just throw it in your face and hopefully you can understand it.

They work with you really well. I think in the past, a lot of the students will come try to take college class, fail. Now, we sort of test and place students properly where they should be, so to set up on the path to success.

Higher level mathematics can be challenging, but they are a vital part of succeeding in any technology career and your local community college can help you strengthen your math skills. For more information on anything you have seen today, explore our website at ATETV.org.

Thanks for watching.