Oregon Wood Innovation Center

Connecting people, ideas, resources

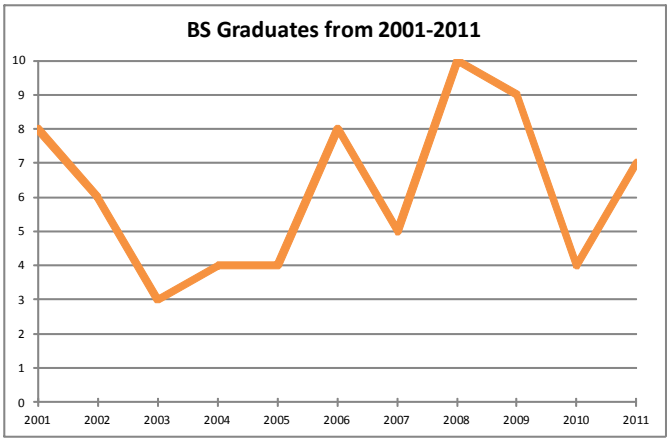
COMING OWIC EVENTS:

- **Decmber 5-7:** How to Dry Lumber for Quality & Profit, **Corvallis, OR**
- **April 26-27:** Selling Forest Products, **Corvallis, OR**

INSIDE THIS ISSUE:

Why Renewable Materials?

In September we completed one full cycle of our new curriculum, Renewable Materials. While there are clearly areas where we need to improve, our first year under the new program was a success. Below we outline important aspects of our new curriculum, but first we address important historical developments.



Why Change from Wood Technology to Renewable Materials?

We have struggled for decades to attract students into our undergraduate program. We have continuously adapted to remain attractive to the new generation. We hired a full-time recruiter in 2001. George Swanson now works for the College, recruiting across all of our curricula and sees thousands of high school and community college students each year. Those of you that have known us for a long time will remember our change from the Department of Forest Products to the Department of Wood Science & Engineering. This change was largely a function of attracting students with an interest in engineering and science. The graph above shows the number of graduates we have produced each year during the last decade. Despite the fact that we have basically 100% placement of our graduates based on a highly specialized degree, OSU is not satisfied with these numbers. In 2009, our undergraduate program was targeted for elimination. We were successful in negotiating several years to reinvigorate the program and dramatically increase our numbers, with a goal of graduating 20 students every year.

How Did We Know What to Change?

In 2009, a national meeting took place at Mississippi State University where the industry and government agencies told wood products program administrators that they need a different type of employee for the future than they have had in the past. They stated a need for a business-savvy employee with global awareness and high communication abilities. Deep technical knowledge was seen as less important than in the past. With this as background, we contracted a series of focus groups with OSU freshmen and Portland area high school seniors. These were conducted at the height of the recession and concerns about job security and career flexibility were heavy on the minds of the students. They saw a degree in wood technology as too narrow to be attractive. They sought a broad-based degree that allowed them a high degree of flexibility. In addition, when presented with a diverse set of degree names, students were most attracted to "Renewable Materials." You'll never guess what was least attractive – "Wood Technology." Starting in fall 2010, students entering our program will receive a BS in Renewable Materials.

What is Really Different?

This change was not well-received by everyone in the industry. In fact, some saw it as a significant "dumbing down" of our curriculum. However, that is not a fair assessment of what we have done. There are some things that we traded off in this process. For example, students will spend a bit less time in manufacturing operations now than in the past. We took the weekly laboratories (mill tours) out of our processing courses, and instead students do a highly intensive week of industry tours in late summer before fall classes begin (see story on page 4). Don't forget, all of our students complete at least six months of real world internship experience so they have plenty of time to obtain

Continued on pg. 2

Continued from pg. 1

in-the-mill experience. We are striving to involve our students in real-world research projects to develop their critical thinking and problem solving skills (see story below and on page 3). We added important elements to the curriculum: innovation management, global trade, and bioenergy – none of which were included as specific courses in the old curriculum. We now cover other renewable materials beyond wood. Of course, we are in Oregon, so wood will always be the key renewable material in the curriculum. There are two options within the major: Marketing & Management and Science & Engineering. The Marketing and Management option results in graduates with a minor in Business. The Science and Engineering option allows a student to tailor her program to very specific technical areas. Bottom line: your future employees from our program will still have the technical expertise that you require AND will be more globally aware citizens with a strong business background. We are confident we have developed the right mix of courses and experiences for our students so that they will be valuable additions to your operations.

The Challenge that Remains

We aren't out of the woods quite yet. We still need to increase our student numbers. We hope that each of you see how critical it is that we succeed. With the exception of the University of Idaho, we are the only wood-related undergraduate program remaining in the western US. If we aren't successful, you will no longer have the possibility of hiring local people with solid technical knowledge of natural materials! In fall 2010, we had a total of two new students enter our program. In fall 2011, we brought in 15 new people. We are on track, but we still need your help. What can you do? We have a number of avenues by which you can become more closely involved with our program and our undergraduates:

- Help us recruit through your employees
- Like us on Facebook so that your network becomes aware of us
- Hire an intern
- Consider offering a scholarship (for employee children or generally)

Find us on Facebook

YouTube

Assessing Wood Quality: Involving Renewable Materials Students in Applied Research

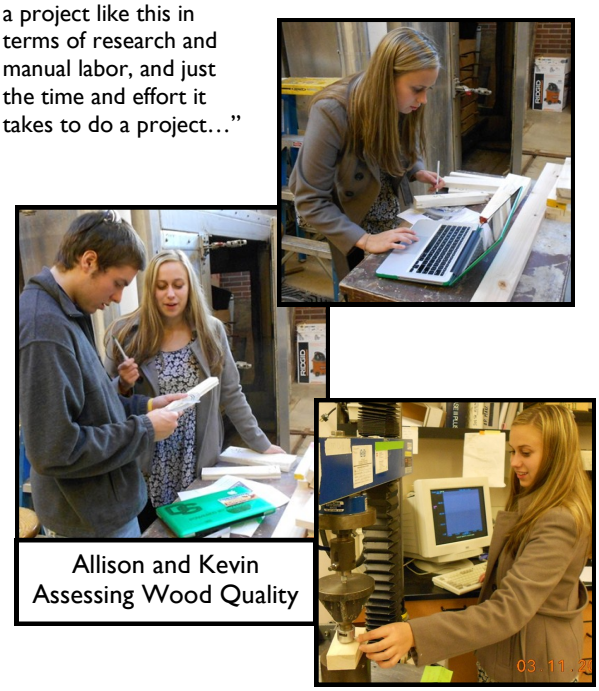
Allison Zumwalt (Renewable Materials and Interior Design dual major, 2014) and Kevin Harry (Renewable Materials, 2014) are getting some hands-on training in assessing wood quality. They are assisting with a project to assess the wood quality of fast-grown plantation hardwoods. The sponsor company is interested in knowing how the slope-of-grain, hardness, and machinability of the wood varies by clone as well as by position within the tree (butt log, second log, etc.).

Allison and Kevin are learning firsthand how to prepare samples, condition them to the proper moisture content, and then to conduct quantitative as well as qualitative assessments of wood quality. For example, for slope-of-grain, they are splitting boards and measuring the angle of the split; and for hardness they are learning to use a universal testing machine to follow the methods outlined in ASTM test standard D143. However, tests to evaluate the machinability of the wood require more subjective methods. They are essentially assigning a grade to each piece based on visual inspection following planing and shaping.

Involving undergraduate students in industry-sponsored projects such as these is a win-win situation. Student workers help to get projects done in a more timely fashion (given limited time for faculty and research assistants) and the projects reinforce and broaden what the students learn in their coursework. As Allison said:

"This project has exposed me to many new aspects of wood science that I wouldn't have been able to gain on my own doing. For example, I was familiar about the hardness of a wood but I have learned why we measure hardness, how to measure hardness and what applications that these measurements have... I am thrilled that I'm working on a project that is innovative, applicable and could potentially make a great difference…"

And Kevin stated, "This work will greatly help me in years to come in my coursework and whatever future job or jobs I have, because it's a process of learning how to conduct a project like this in terms of research and manual labor, and just the time and effort it takes to do a project…"



Allison and Kevin Assessing Wood Quality

Renewable Materials: Training the Next Generation of Sustainability Professionals

Danny Way, Renewable Materials, '12
by Danielle White

Danny Way, a junior, is helping to define the new Renewable Materials program. Danny recently transferred into RM. Initially he changed majors to satisfy his curiosity, but, after his summer work experience with Instructor David Smith (WSE), he has decided to continue the program. Now Danny intends to use his college experience not just for himself but also for others and he is accomplishing his goal by using what loggers leave behind: logging slash.

Logging slash refers to the "unmerchantable" materials left behind from timber cutting, such as tree tops and limbs. "The purpose [of this research] is to help develop a market for these green materials by researching the characteristics and qualities of the materials," he says.

Danny's work is intended to inform both buyers and sellers on their products so that each can meet on equal terms and agree upon prices for certain materials. To get acquainted with these aspects, Danny spends half of his time in the woods recording site characteristics and the other half in a lab analyzing samples. This has resulted in Danny's well-rounded experience as a field and lab technician.

For Danny, this experience "almost changed my view on school. I realized that what I've been learning in my classes related to what I was doing . . . it relates to what society needs."

His connection to real-world experiences has left Danny satisfied with his new RM major. When he graduates, Danny intends to further his research into biomass because "there is so much room for technological advances and being a part of that is something I want to do."

Danielle White, Wood Science & Technology, '11
by Danny Way

Although Danielle White will graduate with a degree in WST, she had her sights set on the concept of renewable materials even before the department developed the Renewable Materials degree program. For her year-long "Senior Project," White decided she was going to investigate the use of wood to provide institutional heating. The goal of the project was to determine how a small institutional boiler that was fueled by wood pellets would compare to a natural gas furnace. "This project really had a lot of people involved," said White, recalling a seven-person conference call that she was involved in.

Danielle first had to work with the City of Corvallis to determine a City facility that could utilize a boiler of this type. That turned out to be Fire Station #5. Then she met with different engineers to work out the plans and cost for installing and using the boiler in Station 5. Two local companies assisted White in her studies. Sologen (boiler manufacturer) provided engineering and equipment costs, and Bear Mountain (pellet manufacturer) helped with calculating the amount of fuel required. Danielle found the interactions with industry professionals to be particularly beneficial: "It was the closest thing to a post graduate job, without actually graduating," she said.

White was assisted throughout the effort by her technical advisor and WSE instructor, David Smith. "I was pleased that Danielle chose to conduct this challenging feasibility study" says Smith. "She not only learned a lot about what it takes to plan and justify a capital improvement project, but also made a real and valuable contri-bution to the City of Corvallis."

After completing the project, White found that the fuel savings from switching from natural gas to wood pellets wouldn't be enough to justify the cost of the installation. "It wasn't viable for this application, but that doesn't mean wood fuels aren't good in different applications," says White.

Sometimes as college students, we get caught up in exams and projects and find ourselves asking, "When are we ever going to use this information?" For Danielle this was a perfect reminder of why we seek a college education. "Had the boiler actually been installed, I wonder how many people it would have affected. The jobs created, the economy boost . . . no other class could have given me an experience like this."

— Reprinted from the spring 2011 *Focus on Forestry*

WSE 465 Inaugural Class Offering

Nine students participated in the first class of WSE 465, Renewable Materials Manufacturing Experience. The class visited 17 different manufacturing facilities in a five day period the week of September 19, which was the week before on-campus classes began. Facilities visited included traditional wood-based manufacturers such as Seneca Lumber Co, Jeld-Wen/Bend Millwork, and Flakeboard MDF. It also included non-wood manufacturers and secondary manufacturers such as Bamboo Revolution, Renovo Hardwood Bicycles and Breedlove Guitars. In addition, students traveled to Boardman, Oregon. There they visited Greenwood Resources hybrid poplar tree farm, which grows and harvests fast growth, non-GMO poplar on 35,000 acres. Most of the harvest goes to the Upper Columbia Mill, arguably one of the most advanced sawmills in the country. While in Boardman, a visit was paid to Pacific Ethanol, a 40 million gal/year corn-based fuel manufacturer, and Zeachem, a biorefinery still under construction that will produce acetic acid, ethanol, and ethyl acetate from biomass (mostly a poplar intercrop and straw).

In all, the class traveled approximately 700 miles during the week with two overnights at motels. All participants noted that the class was interesting, informative and a positive contribution to their education. Tanner Young, a junior in the class commented:

"The WSE 465 class was a great hands-on experience, I learned about the manufacturing and marketing of wood products. This was not only one of my favorite WSE classes, but I actually learned good information for my future. There are cool stops along the way like Renovo Bicycles and Bamboo Works! I got to make friends with WSE peers early Fall term, we are all determined to graduate.

Thanks for this opportunity!"

Undergraduate Students at Collin's Upper Columbia Mill, Breedlove Guitars and Pacific Ethanol

To subscribe to this newsletter send an email to Chris Knowles with "subscribe to newsletter" in the subject line.

Contact us:
Oregon Wood Innovation Center
http://owic.oregonstate.edu
119 Richardson Hall
Corvallis, OR 97331-5751

Scott Leavengood, OWIC Director
Scott.Leavengood@oregonstate.edu
Phone: 541-737-4212

Chris Knowles, OWIC Assistant Director
Chris.Knowles@oregonstate.edu
Phone 541-737-1438

Previous issues of the OWIC newsletter are available at: http://owic.oregonstate.edu/newsletter/

Oregon State University OSU College of Forestry