Oregon State University
Professional and
Continuing Education

Course Title: Strand-based Composite Manufacturing
Term Offered: On Demand

Instructor name: A. William Boehner
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Instructor phone: 208.867.4867

Instructor bio
Bill Boehner received a B.S. degree from the College of Forestry (in Wood Science and Technology) from the University of Maine in 1967, and an M.S. degree in Pulp and Paper Technology a year later from the same institution. He earned his Ph.D. degree in 1975 at the University of Minnesota, with a major in Wood Science and Technology. Dr. Boehner worked for Weyerhaeuser Company and Trus Joist MacMillan for a combined 31 years. Bill held several positions within these two companies including R&D project leader, technical director at Weyerhaeuser Company's first OSB plant in Grayling, Michigan, and Manager of the Research Center in Boise, Idaho. Bill's career has been dedicated to advancing the knowledge of manufacturing composites products: medium density fiberboard, particleboard, medium density siding, oriented strandboard, and laminated strand lumber. He has also been involved in product development activities.
Bill is currently a courtesy faculty member in the Department of Wood Science & Engineering at Oregon State University.

Course Description
This **Strand-based Composite Manufacturing** course covers the manufacturing of strand-based composites (OSB and LSL) beginning in the forest and continuing through pressing as outlined below. Within each lecture, key variables that affect the quality of the intermediate product, such as a strand, as well as the finished panel product are identified and discussed. Results of scientific studies and a mill trial are presented to support conclusions.

Prerequisites
No prerequisites.

Course Sequencing
This course is part of the Wood-Based Composite Science program, which includes the following courses:
Course 1: Wood Structure
Course 2: Wood and Water Relationships
Course 3: Applied Statistics and Data Analysis
Course 4: Wood Adhesion Science and Technology
Course 5: Strand-based Composite Manufacturing
Course 6: Practical Wood Adhesives Technology
Course 7: Structural Plywood and Veneer Based Composite Manufacture

This course is **5th** in the sequence.

Communication
I expect you to contact me when you begin the course and at any time you have questions. I will reply to course-related questions and email within 24-48 hours.

Continuing Education Units: None

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Canvas
This course will be delivered via Canvas where you will access the syllabus, learning materials, tutorials, discuss issues and/or display your projects. If you are having problems accessing Canvas check your computer compatibility.

Technology Support
If you experience difficulties, errors, or problems in Canvas, please click the Help button located at the bottom of the left sidebar within your Canvas course for 24/7 Tier 1 technical support 24/7.

If you have difficulties accessing your course in Canvas, please contact PACE at (541)737-4197 or email pace@oregonstate.edu. We are available Monday through Friday from 8 a.m. until 5 p.m. Pacific time.

Course Mode
This course is self-paced and always available to you. You set the schedule for completion. Each module contains (1) the main lesson, and (2), an assessment.

Learning Resources
All materials will be provided via Canvas.

Measurable Learning Outcomes
At the end of this course, learners will be able to understand the:

- ✓ effect of decayed wood on stranding and panel properties
- ✓ effect of species on processing and on panel properties
- ✓ effect of strand geometry on panel properties
- ✓ amount of strand degradation in the processs
- ✓ effect of adhesive droplet size and distribution
- ✓ effect of variable basis weight on the forming line
- ✓ effects of permeability of the mat during pressing

Evaluation and Grading
All PACE courses are pass / no pass. You must score 70% on the final exam to pass the course.

Evaluation of Learner Performance

✓ Quizzes within each lecture	0%
✓ Final exam	100%
Total	100%

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Course Outline

Lecture	Topic	Learning Activities	Assessments
1	Introduction	Review patent	Ungraded quizzes
2	Initial considerations – species and wood quality	Review studies on decay, compaction ratio, juvenile vs mature wood	Ungraded quizzes
3	Green end, Part 1 – trees, logs, and storage	Review studies concerning effect of strand dimenions on panel properties	Ungraded quizzes
4	Green end, Part 2 – log preparation, debarking, and stranding	Review stranding key variables and results of a mill strand degradation study	Ungraded quizzes
5	Drying, screening, and conveying	Review effect of wood moisture content on drying, introduce subject of emissions, continue to review strand degradation throughout process	Ungraded quizzes
6	Blending	Discuss blending variables such as droplet size and distribution	Ungraded quizzes
7	Mat forming	Review studies emphasizing uniformity of flow, minimizing areas of high and low basis weight	Ungraded quizzes
8	Pressing	Review studies on mat permeability, and effect of mat moisture content	Ungraded quizzes

Disabilities, Accessibility, and Accommodations

PACE seeks to accommodate the diverse experiences and learning styles of the students. Accessibility accommodations are collaborative efforts between learners and PACE. If you require accommodations, please email pace@oregonstate.edu.

Expectations for Student Conduct

Student conduct is governed by the university's policies, as explained in the Student Conduct Code. In an academic community, students, faculty, and staff each have responsibility for maintaining an appropriate learning environment, whether online or in the classroom. Learners, instructors, and staff have the responsibility to treat each other with understanding, dignity and respect. Disruption of teaching, administration, research, and other institutional activities is prohibited subject to sanctions under university policies.

Academic Integrity

Students are expected to comply with all regulations pertaining to academic honesty, defined as: An intentional act of deception in which a student seeks to claim credit for the work or effort of another person or uses unauthorized materials or fabricated information in any academic work.

Conduct in this Online Classroom

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Students are expected to conduct themselves in the course (e.g., on discussion boards, email postings) in a civil manner. Students will be expected to treat all others with the same respect, as they would want afforded themselves. Disrespectful behavior to others (such as harassing behavior, personal insults, inappropriate language) or disruptive behaviors in the course (such as persistent and unreasonable demands for time and attention both in and out of the classroom) is unacceptable.

Netiquette

In an online classroom, your primary means of communication is written. The written language has many advantages: more opportunity for reasoned thought, more ability to go in-depth, and more time to think through an issue before posting a comment. However, written communication also has its disadvantages. This includes a lack of the face-to-face signaling that occurs through body language, intonation, pausing, facial expressions and gestures. As a result, please recognize the possibility of miscommunication and compose your comments in a clear, positive, supportive, and constructive manner. Please be sure to be professional by demonstrating tolerance for diverse points of view and give each other the benefit of the doubt about any unclear intended meanings.

Evaluation

Course evaluation results are extremely important and are used to help improve this course and the learning experience of future students.

If you have feedback for improving the course, either during this session or for subsequent sessions, we would like to know. To provide direct feedback, please email pace@oregonstate.edu.

Contact Us

This course is offered through OSU Professional and Continuing Education. Contact us for more information using any of these methods:

Web: pace.oregonstate.edu
Email: pace@oregonstate.edu
Tel: 541.737.4197