The 72nd Annual Workshop on:

**How to Dry Lumber for Quality & Profit**

**Lumber drying complete**
- Webinar format: October 12 – December 11, 2020
  - OR
  - Self-paced format: Start anytime

**Lumber drying basics**
- Self-paced only: Start anytime
### Lumber Drying Basics

- Course introduction
- Why wood is dried
- Safety
- Features of lumber
- Wood variability
- Measuring temperature and humidity
- Moisture content
- Water in wood, EMC
- Shrinkage and strength
- Water movement in wood
- Stress development and relief
- Defect development and prevention
- Types of schedules, drying
- Equalization
- Conditioning and cooldown
- Special schedules
- High-temperature drying
- Kiln designs
- Steam kilns, heating
- Direct-fired kilns (optional)
- Venting and humidification
- Fan systems
- Baffling
- Airflow
- Sorting in the sawmill
- Stacking
- Sorting at the planer (optional)
- Kiln loading
- Preparing to dry
- Measuring moisture content
- Running a charge
- Operating efficiently
- Maintaining quality

### Lumber Drying Complete

- Course introduction
- Why wood is dried
- Safety
- Features of trees and lumber
- Softwood structure
- Hardwood structure (optional)
- Wood variability and its impact on drying
- Specific gravity
- Measuring temperature and humidity
- Psychrometrics
- Moisture content
- Oven-dry method (optional)
- Moisture content samples (optional)
- Water in wood, EMC
- Shrinkage and strength
- Water movement in wood
- Factors affecting the drying rate
- Stress development
- Stress relief, conditioning
- Defects due to wood-related factors
- Defects that develop in the kiln
- Air drying (optional)
- Types of schedules
- Lumber segregation and kiln startup
- Time-based schedules
- Moisture-based schedules (optional)
- Equalization
- Conditioning and cooldown
- Schedule examples
- Special schedules
- High-temperature drying
- Kiln designs
- Steam
- Steam-heated kilns, steam delivery
- Steam-heated kilns, condensate return
- Direct-fired kilns
- Venting and humidification
- Fan systems
- Baffling
- Measuring airflow
- Selecting an air velocity
- Sorting in the sawmill
- Stacking
- Sorting at the planer (optional)
- Kiln loading
- Preparing to dry
- Measuring moisture content
- Running a charge
- How the controller works
- Control system maintenance
- Mechanical maintenance
- Cost
- Energy
- Minimizing downtime
- Understanding data
- Continuous improvement
- Using the planer moisture meter and autograder

### Which course to take:

Lumber drying basics is for people that work with kilns but are not directly managing them. It is more appropriate for workers assisting at the kiln, supervisors in other departments, and those who sort, stack, or load lumber for the kiln. It takes 12-15 hours (6.5 hrs. narration) to complete the 31 modules listed above. It is self-paced.

Lumber drying complete is for those who manage day-to-day kiln operation, adjust schedules, and decide operating protocols at the kiln. It takes 24-36 hours (15 hrs. narration) to complete the 57 modules listed at the right. It is self-paced or offered with webinars during which some of the modules are presented. The webinars will be held 8-10 am Pacific on Wednesdays:

- October 21
- November 4
- November 18
- December 9
**Course access:**
Courses require a Windows or Mac computer or tablet with web access and a speaker.

Webinars work best with a webcam, speaker, and microphone. The minimum requirements are a computer with web access and a phone connection. There will be a way to make up webinar content. If multiple conflicts are anticipated, consider the self-paced version.

**Quizzes:**
Quizzes are embedded in the modules to help learners retain information. A grade of 80% is required on all quizzes to move on in the class.

**Discussions:**
Learners in Lumber Drying Complete are required to participate in four of eight discussion topics. Participation may require a camera or cellphone for photos.

**Instructor access:**
All courses are monitored by the instructor and there is access to the instructor for questions. Questions can also be posted as a discussion for class input.

**Reference materials:**
PDFs of all presentation materials are downloadable as are several spreadsheets and tools for kiln management.

**Course Fee:**
The cost for Lumber Drying Basics is $495. The cost for Lumber Drying Complete is $795. Self-paced classes are available for one year after registration. The webinar class is available from October 12 to December 11, 2020.

**Register:**
Register or obtain more course information through OSU Professional and Continuing Education at [https://pace.oregonstate.edu/catalog/lumber-drying-online-workshop](https://pace.oregonstate.edu/catalog/lumber-drying-online-workshop) or call (541) 737-4197.

For additional course content information please contact:
Department of Wood Science & Engineering
Tel: 541-737-4210 (leave message)
Email: mike.milota@oregonstate.edu

**Cancellations:**
OSU reserves the right to cancel and issue refunds if the course is below the minimum participant requirement.

Substitutions can be made prior to the start of the webinar course by contacting the PACE enrollment office, (541) 737-4197.

Webinar classes may be cancelled on or before October 14 to receive a refund (less registration fee). Email cancellation requests to pace@oregonstate.edu. No refunds are granted for the self-paced classes.

**The instructor:**
Mike Milota is owner of Wood Moisture Solutions, LLC, providing training and consulting for the lumber industry. He started his career with the Masonite Corporation, worked at the U.S. Forest Products Laboratory, then at OSU for 29 years. Mike has organized OSU's drying course for 33 years and put on many on-site workshops for sawmills.
Oregon State University
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The purpose of these courses is to provide an understanding of wood and how to dry it. We cover how wood properties and lumber handling affect drying. Lumber preparation, kiln loading, and kiln operation are covered with an emphasis on balancing quality with production.

**Lumber Drying Basics** is designed for personnel who assist at the kiln or prepare lumber for the kiln from sorting to loading. Supervisors at the sawmill or planer as well as mill QC personnel will find this course more appropriate than Lumber Drying Complete. New personnel and experienced personnel will benefit. Mills will see payback through improved lumber quality, higher kiln throughput, and energy savings.

**Lumber Drying Complete** contains more detail for personnel who directly oversee kiln operation or may be in that role soon. All of the concepts from Lumber Drying Basics are included plus more information and discussion on psychrometrics, maintenance, schedules, how kilns work, reducing costs, saving energy, and kiln management strategies.