



Wood Science and Engineering  
119 Richardson Hall  
Corvallis, OR 97331-5751  
<http://owic.oregonstate.edu/lumber-drying-workshop>

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

**NEW!**

# Class outlines

## 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

### 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

## 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

**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>

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](mailto: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](mailto: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

## How to Dry Lumber for Quality and Profit

Lumber drying complete

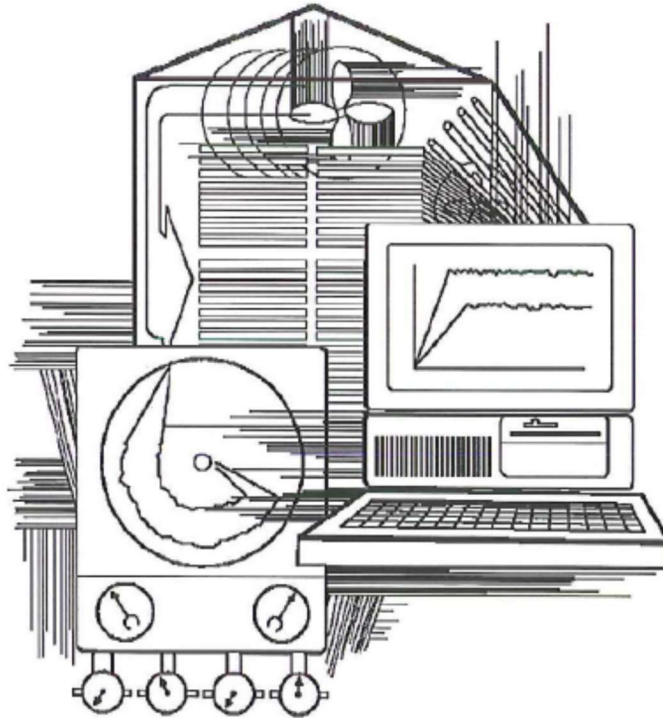
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The purpose of these courses is to provide an understanding of wood and how to dry it. We cover how wood properties and lumber handling affect drying. Lumber preparation, kiln loading, and kiln operation are covered with an emphasis on balancing quality 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.