

## Curriculum Development Stream: Lumber Production

### Mino Bimaadiziwin Partnership

**Curriculum Stream Goal:** The main goal is to provide students with theoretical knowledge, technical skills, and experiential learning to produce dimensional lumber, the most common sawmill product.

**Module Learning Goal: Total of 40 hours(Theory, Hours 13; Practical, Hours 27)**

The theoretical and practical learning will focus on eight (8) core course modules for this lumber production curriculum stream, which includes: lumber fundamentals, sawmill operations, sawmill safety, and health, sawmill hand and power tools, quality control, lumber drying, board scaling, and sawmill economics.

**Specific Learning Objective(s):** These objectives are to understand basic lumber calculation, process timber at sawmill, service equipment, seasoning, quantity estimation, and inventory management. There is also a provision for an estimate of theory and practical instructional hours for each objective as indicated below:

Course Modules	Learning Objectives	Theory/Practical	Period (Hours)
1. Lumber fundamentals	Students will be introduced to sawmill types and basic rule for lumber <sup>1</sup> : <ul style="list-style-type: none"><li>• calculator and quantity estimator</li><li>• national grading rule for taking lumber dimensions</li><li>• Classification (structure of wood) hard and softwood</li><li>• Portable and fixed sawmills</li></ul>	Practical	(1+/4+)
2. Sawmill Operations	Students will learn most steps in processing lumber at the mill from start to finish <sup>2</sup> : <ul style="list-style-type: none"><li>• felling &amp; debarking</li><li>• metal detecting &amp; merchandising</li><li>• head rig sawing &amp; canting</li><li>• resawing &amp; edging and trimming</li><li>• grading, drying and planing</li></ul>	Practical	(1+/4+)
3. Sawmill Safety and Health	Students will learn important precautionary measures to reduce the potential for injury <sup>3</sup> : <ul style="list-style-type: none"><li>• Lumber yard safety tips</li><li>• Sawmill safety inspection checklist</li><li>• Occupational safety &amp; health</li></ul>	Practical	(1+/4+)

<sup>1</sup> Keith, DeJoe, E., & Alcaraz, R. (2020, January 20). Lumber Calculator - Determine How Much Wood You Need. Retrieved July 02, 2020, from <https://www.homeadvisor.com/r/lumber-calculator/>

<sup>2</sup> Complete Guide To Sawmills: What Is A Sawmill & How Do They Work? (n.d.). Retrieved July 05, 2020, from <https://www.yorksaw.com/guide-to-sawmills/>

<sup>3</sup> Sawmills. (n.d.). Retrieved July 05, 2020, from <https://www.worksafebc.com/en/health-safety/industries/manufacturing/types/sawmills> ;

Top 10 health and safety risks in Ontario sawmills. (2018, April 10). Retrieved July 05, 2020, from <https://www.workplacesafetynorth.ca/news/news-post/top-10-health-and-safety-risks-ontario-sawmills>

	<ul style="list-style-type: none"> <li>• Substance use &amp; Psychosocial influences (stress)</li> <li>• Slips, trips, and falls &amp; working from heights</li> </ul>		
4. Sawmill Hand and Power Tools	<p>Students will learn a variety of hand and power tools for quality control measurement systems, including tools for<sup>4</sup>:</p> <ul style="list-style-type: none"> <li>• sorting line in the sawmill</li> <li>• drying optimization</li> <li>• strength grading of wood quality grades</li> <li>• monitoring wood moisture in the kilns</li> </ul>	Practical	(1+/4+)
5. Quality Control	<p>Students will learn lumber quality control and grading in sawmills, including<sup>5</sup>:</p> <ul style="list-style-type: none"> <li>• logging standard</li> <li>• sawing accuracy</li> <li>• sawyer's first-hand experience from: <ul style="list-style-type: none"> <li>a. professionals,</li> <li>b. elders, and</li> <li>c. mentors</li> </ul> </li> </ul>	Practical	(1+/4+)
6. Lumber Drying	<p>Students will learn all necessary steps in drying lumber, including<sup>6</sup>:</p> <ul style="list-style-type: none"> <li>• Seasoning &amp; yard drying</li> <li>• flat piling &amp; end piling</li> <li>• end racking &amp; crib Piling</li> <li>• dipping tanks &amp; End Coating</li> </ul>	Practical	(1+/4+)
7. Board Scaling and grading	<p>Students will learn<sup>7</sup>:</p> <ul style="list-style-type: none"> <li>• Quantity estimation</li> <li>• inventory control</li> </ul>	Theory and practical	(3+/2+)
8. Sawmill Economics	<p>Students will learn<sup>8</sup>:</p> <ul style="list-style-type: none"> <li>• Simple record forms</li> <li>• Inventory management</li> <li>• Saw mill accounting</li> <li>• Balance sheet</li> </ul>	Theory	(4+/1+)

<sup>4</sup> Sawmills - Timber quality control. (n.d.). Retrieved July 05, 2020, from <https://dynalyse.com/industries/sawmills/>

<sup>5</sup> Complete Guide To Sawmills: What Is A Sawmill & How Do They Work? (n.d.). Retrieved July 05, 2020, from <https://www.yorksaw.com/guide-to-sawmills/>

<sup>6</sup> Sawmills - Timber quality control. (n.d.). Retrieved July 05, 2020, from <https://dynalyse.com/industries/sawmills/>

<sup>7</sup> Sawmills - Timber quality control. (n.d.). Retrieved July 05, 2020, from <https://dynalyse.com/industries/sawmills/>

<sup>8</sup> Complete Guide To Sawmills: What Is A Sawmill & How Do They Work? (n.d.). Retrieved July 05, 2020, from <https://www.yorksaw.com/guide-to-sawmills/>

### **Evaluation:**

- Students will have an exercise at the end of each module to test and reinforce their knowledge and skills gained.

### **Key Points:**

- This module is designed to provide students with technical (practical) information and skills training on sawmill process/tools. They will gain knowledge across multiple areas of sawmill processes; from felling to drying, calculating dimension and estimating quantity, to quality grading.
- Develop safe work skills, sustainable strategies, and cultural competencies in operating and managing sawmill and its surroundings.

### **Annotated bibliography:**

Keith, DeJoe, E., & Alcaraz, R. (2020, January 20). Lumber Calculator - Determine How Much Wood You Need. Retrieved July 02, 2020, from <https://www.homeadvisor.com/r/lumber-calculator/>

**Lumber calculator:** Provides information on dimensions taking (length, width, and thickness), and calculating quantity of lumber.

NATIONAL GRADING RULE for DIMENSION LUMBER. (n.d.). Retrieved July 5, 2020, from <https://www.spib.org/pdfs/NGR-Interpretations.pdf>

**National Grading Rule for Dimensions Lumber:** It provides information on basic lumber product grading standards. The structural standard on joists and planks, dimensioning of studs, beams, and light framing construction standard.

Complete Guide To Sawmills: What Is A Sawmill & How Do They Work? (n.d.). Retrieved July 05, 2020, from <https://www.yorksaw.com/guide-to-sawmills/>

**Complete Guide on Sawmill:** This complete guide on sawmill provides information on the process steps involved in making a sawmill work: Beginning from felling, debarking, metal detecting, merchandising, head rig sawing, canting, resawing, edging and trimming, and to finally grading, drying and planing.

Sawmills. (n.d.). Retrieved July 05, 2020, from

<https://www.worksafebc.com/en/health-safety/industries/manufacturing/types/sawmills>

**Sawmills Yard Safety and health Guideline:** This sawmill work safe guideline provides information on the safety and health risk of sawyers and individuals at sawmill yard.

Top 10 health and safety risks in Ontario sawmills. (2018, April 10). Retrieved July 05, 2020, from <https://www.workplacesafetynorth.ca/news/news-post/top-10-health-and-safety-risks-ontario-sawmills>

**Top 10 Safety Risks in Ontario sawmills:** The Top 10 health and safety risks in Ontario sawmills: Provides basic on sawmill site, step by Step precautionary Information useful for sawyers: students, workers, supervisors, and employers.

Sawmills - Timber quality control. (n.d.). Retrieved July 05, 2020, from <https://dynalyse.com/industries/sawmills/>

**Quality Control and Grading:** Multiple ranges of tools for lumber quality control and grading in sawmills and other woodworking industries.

### **References:**

Complete Guide To Sawmills: What Is A Sawmill & How Do They Work? (n.d.). Retrieved July 05, 2020, from <https://www.yorksaw.com/guide-to-sawmills/>

Keith, DeJoe, E., & Alcaraz, R. (2020, January 20). Lumber Calculator - Determine How Much Wood You Need. Retrieved July 02, 2020, from <https://www.homeadvisor.com/r/lumber-calculator/>

NATIONAL GRADING RULE for DIMENSION LUMBER. (n.d.). Retrieved July 5, 2020, from <https://www.spib.org/pdfs/NGR-Interpretations.pdf>

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Top 10 health and safety risks in Ontario sawmills. (2018, April 10). Retrieved July 05, 2020, from <https://www.workplacesafetynorth.ca/news/news-post/top-10-health-and-safety-risks-ontario-sawmills>