

Course Syllabus

Instructor:	Dr. Ian D. Hartley, Professor Ecosystem Science and Management Program / Department of Physics
Office:	Teaching and Learning Building, 10-2098
Office Hours:	By appointment
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Lectures

Monday & Wednesday, 8:30 – 9:20 am
Library 5-122

Laboratory Sessions

Thursday, 8:00 am – 10:50 am
Teaching Lab 8-325

1.0 Course Description

Properties, values and the processing of forest products including wood, pulp and paper, pharmaceuticals, and other botanical products are presented and studied. Also, life-cycle analysis of products manufactured from wood and its derivatives are presented. Value-added strategies and product diversification through manufacturing and marketing are discussed.

2.0 Course Requirements

Chemistry 100-3 and 101-3

3.0 Learning Objectives

Upon successful completion of the course, the students will have developed:

- Ability to identify various tree species based on wood morphological and anatomical characteristics.
- Basic understanding of the wood quality attributed (including the factors influencing wood quality) and their practical implications.
- Basic understanding of the physical, mechanical and chemical properties of wood.
- Familiarity with the manufacturing processes for pulp and paper and other wood products.
- Basic knowledge of life cycle of wood products (durability, recycling potential, etc.).
- Knowledge of other forest products and their role in multiple resource use.
- Familiarity with the utilization of forest products, the structure of the domestic and global forest products industry, and an awareness of the future of new and existing products.

4.0 Textbooks -- Required – Available from Instructor

- Shmulsky, Rubin and Jones, David. 2010. Forest Products and Wood Science. An Introduction. 6th Ed.

5.0 Recommended Books – Available from the Instructor

- Hoadley, R.B. 1990. Identifying wood, accurate results with simple tools. Taunton Press, Inc. Desch, J.E. and J.M. Dinwoodie. 1996. Timber: Structure, Properties, Conversion and Use. 7th Edition. Food Products Press, London.
- Hoadley, R.B. 1980. Understanding wood. Taunton Press, Inc., Newtown, Conn.
- Mullins, E.J. and T.S. McKnight (eds.). 1981. Canadian Woods: their properties and uses. 3rd Edition.

University of Toronto Press, Toronto.

- Panshin, A.J. and C. de Zeeuw. 1980. Textbook of wood technology. 4th Edition. McGraw-Hill Book Co., Toronto.

6.0 Course Materials, Handouts and Assignments

All assignments, laboratory handouts and other course material will be available on the course Blackboard site (learn.unbc.ca).

7.0 Course Format and Evaluation

The course consists of lectures, in combination with labs, field trips, guest speakers and assignments.

Course Total = 100%.

Assignments (4 @ 10% each)	40%	Final Examination	35%
Wood Identification Test	15%		
Field Trips Reports	10%		

7.1 Assignments:

There are four (4) assignments. The assignments cover general and specific topics in the course, including quantitative problem-solving related problems.

7.2 Wood Identification:

Woods of hardwoods and softwoods are examined in the form of individual species, species groups or genera, based on gross physical and structural features visible with a 10x hand lens. Please bring a hand lens of 10 or 20 power during the lab sessions. The date for the wood identification exam is **not set**.

7.3 Field Trips:

Students are required to attend all field trips and submit a 1-page typed summary report for each trip. Details of the trip will be provided when arranged. Details for the report are provided closer to date of trips. Students, who can clearly demonstrate that they have been on similar trips and/or worked in similar processing facilities, may be excused from the trips with permission from the instructor *prior* to the field trip. However, for equivalent credit in lieu of the trip, a 1-page written report is required on a topic in wood processing and approved by the instructor.

7.4 Final Examination:

The Examination is a cumulative take-home exam, covering all the materials covered in class during the entire semester (lecture and laboratory). The date for the examination will be scheduled by the Instructor when the course material is completed.

8.0 Academic Dishonesty and Student Misconduct

Guidelines for Academic Offenses and Student Conduct are detailed in the Undergraduate Calendar which can be found in the printed and on-line versions. The course is governed by these regulations and policies. Please ensure that you are aware and understand the procedures and consequences of actions, such as plagiarism, cheating and disruption of class. If you have any questions, contact the instructor.

9.0 Disability Services

If there are students in this course who require additional assistance, or may have a need for special academic accommodations, please come and discuss this with me, or contact Academic Success Services (www.unbc.ca/asc).

10.0 Grading and Late Submission of Assigned Work

All work that is submitted for grading are marked in a timely fashion. It is important that the work be presented professionally. Therefore, work that is illegible, in-coherent or otherwise poorly presented is subject to penalty up to 10% of the maximum grade. Incorrect spelling of words and poor use of grammar

are subject to penalty of 1% of the maximum grade for each occurrence.

Late submissions of assigned work are penalized 10 percentage points of the maximum grade per day for every 24-hour period. For example, if the assigned work is submitted 24-hours late and had a maximum grade of 100% and a grade of 87% was given, then the actual recorded grade would be 77%. If it was 48-hours late, then the actual recorded grade would be 67%. No late assigned work will be accepted after the assigned work has been returned to the students.

Due dates will be clearly indicated on the assigned work.

11.0 Course Topics – Lecture and Laboratory

- Introduction to course and expectations
- Moisture content, density and dimensional change
- Gross structure of wood (softwoods and hardwoods)
- Moisture content, density and dimensional change
- Cellular structure (softwoods)
- Wood identification (softwoods)
- Cellular structure (hardwoods)
- Variability in structure / Molecular structure
- Wood identification (softwoods / hardwoods)
- Wood identification (hardwoods)
- Strength, elasticity and toughness of wood
- Manufactured wood and board products
- Wood preservation / Pulping of wood
- Quality control and exercises
- Degradation / Scanning technologies
- Marketing and markets of forest products

Field Trip Reports -- Preamble and Instructions

Most field trips are of two types: *general information gathering* of an operation or product manufacturing, or, *specific* trip or meeting to discuss issues of mutual interest. In this course, the ‘general information gathering’ field trip is more likely to occur than the specific-type trips. Generally, the purpose of these trips is to observe the processing of wood to make a product, *i.e.*, dimension lumber, plywood or pulp and paper. An example of a field trip report is included. **It is strongly encouraged to take notes and ask questions during the trip, either to the host or to the class instructor.**

1.0 Format

The field trip report is one-page long with 1.9-cm margins all around. The typed-text is single spaced. The size of the font is 11 or 12; Times New Roman font is preferred. The report is divided into two sections, but not explicitly, as ‘key information’ section followed by a ‘details’ section. The following is the format to which you must follow for the ‘key information’ section:

Date of trip:	Date of trip, or range of dates if more than 1 day long.
Company:	Legal full name of company.
Company Address:	Physical address, not mailing address, phone and fax numbers, website
Contact:	Person hosting the meeting, position and/or title, email address
Objective(s) of trip:	One or two lines describing the purpose and/or intent of the trip.

Since this is a ‘general information gathering’ field trip, there are no hard-and-fast rules as to what has to be presented; however, it must meet the objective of the trip. **The report must highlight a key process that is of interest to you.** For example, if you are reviewing a manufacturing process of kiln drying lumber, your report discusses the general manner with which the operation dries lumber, but it discusses moisture content monitoring in the kiln.

As this a **record of the trip**, all reports must be signed. **No exception.**

2.0 Grade

The report is graded out of 10, as follows:

Preparation of the report in the format described above	3 marks
Clarity and flow of report, met objectives	7 marks
Spelling mistake (4 spelling mistakes net 1 mark)	- 1/4 marks from final grade

No report will be graded until signed. I will notify you if you have neglected to sign the report; however, late penalties will apply until signed.