

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: RAW MATERIALS

CODE NO.: PPE 154-3 SEMESTER

PROGRAM: PULP AND PAPERMAKING OPERATIONS
(Distance Education Only)

AUTHOR: ADAM SUGDEN

DATE: MAY 1990 PREVIOUS OUTLINE DATED: APRIL 1989

APPROVED:

DEAN



DATE



RAW MATERIALS

PPB 154-3

COURSE NAME

COURSE NUMBER

TOTAL CREDIT HOURS: 48

PREREQUISITE: NONE

I. PHILOSOPHY/GOALS:

This course is derived from PPE 151 (Raw Materials and Testing) and is specifically established for students in the distance education format of Pulp and Papermaking Operations.

The course will provide the student with the information required to understand the biology of wood, how its quality affects pulp and paper properties, how it is grown and harvested, how it is processed at the mill before pulping and how it is stored.

A companion course, PPE 155 (Introduction to Pulp Testing), also for students in the distance education format, introduces students to some basic pulp testing procedures.

II. STUDENT PERFORMANCE OBJECTIVES:

The overall educational objective of this course is that the student will be able to demonstrate basic knowledge of the nature, use and processing of woody raw material prior to pulping.

Upon successful completion of this course the student will be able to:

1. Demonstrate a basic knowledge of the biology of wood, how it is structured, how a tree grows and how forests grow.
2. Demonstrate a working knowledge of the major effects of wood qualities on pulp and paper properties.
3. Demonstrate a knowledge of how woody raw materials are harvested, measured and transported to the mill.
4. Demonstrate a knowledge of the processes used to prepare wood for pulping, such as debarking, chipping and storage.

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III. TOPICS TO BE COVERED:

WEEK	TOPIC
1.	<ul style="list-style-type: none">- Introduction to course and topics covered- Laboratory safety, behaviour and responsibility- Introduction to lab exercises, use of equipment- Importance of raw materials
2.	<ul style="list-style-type: none">- Canadian forests, tree growth, tree biology- Organization of wood in trees
3.	<ul style="list-style-type: none">- The cellular basis of wood- Anatomical, chemical and physical properties- Specific gravity, water content of wood- Sapwood and heartwood
4.	<ul style="list-style-type: none">- Fibres, the building blocks of pulp and paper- Fibre wall structure- Fibre length- Fibre width and fibre wall thickness
5.	<ul style="list-style-type: none">- How wood quality affects pulp and paper- Effects of anatomical properties- Effects of chemical and physical properties
6.	<ul style="list-style-type: none">- Review of Chapters 1, 2, 3 and 4
7.	<ul style="list-style-type: none">- Test 1 (Chapters 1, 2, 3 and 4)
8.	<ul style="list-style-type: none">- Forest ownership and management in Canada- Forest harvesting- Sawmill chips- Log and chip transport

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WEEK	TOPIC
9.	<ul style="list-style-type: none">- Wood measurement- Wood handling at the mill
10.	<ul style="list-style-type: none">- Unloading, transport and storage- Preparing wood for pulping
11.	<ul style="list-style-type: none">- Sorting for quality- Deicing and slashing- Debarking, bark handling and disposal
12.	<ul style="list-style-type: none">- Chippers, chipping- Chip screening- Chip washing
13.	<ul style="list-style-type: none">- Chip storage- Chip delivery to pulping process
14.	<ul style="list-style-type: none">- Chip quality, its measurement and effects- Costs of poor chip quality
15.	<ul style="list-style-type: none">- Review of Chapters 5, 6, 7 and 8
16.	<ul style="list-style-type: none">- Test 2 (Chapters 5, 6, 7 and 8)

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IV. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS ETC.)

The final grade for this course will be based on the student's performance on tests and assignments. The first test covers Chapters 1, 2, 3 and 4 while the second one covers Chapters 5, 6, 7 and 8. Two assignments will be set during the course.

The final grade is calculated on the following basis:

Test 1	40%
Test 2	40%
Assignment 1	10%
Assignment 2	<u>10%</u>
TOTAL	100%

The following letter grades are used as measures of students' performance in the course:

A+, 90-100%; A, 80-89%; B, 70-79%; C, 60-69%; R, <60%

Students having a final percentage grade between 50% and 59% may be permitted to write a supplemental examination.

V. REQUIRED STUDENT RESOURCES

TEXTBOOK(S):

A prepared text, "A Course Manual for PPE 154: Raw Materials" will be available from the College Bookstore.

VI. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY BOOK SECTION:

In addition, a reference book is recommended for this and other courses. This book is:

Smook, G., Handbook for Pulp & Paper Technologists. Joint Textbook Committee of the Paper Industry, CPPA, Montreal, 1982.

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VII. SPECIAL NOTES

NATURE OF PRESENTATION

Distance Education Students:

As the course is designed around a prepared study guide, much of the work will be based on the student's independent study. Students will meet the instructor for two hours per week using telephone conference links.