

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

COURSE OUTLINE

Course Title: PAPER TECHNOLOGY I
Code No.: PPE 240-3
Program: PULP & PAPER ENGINEERING TECHNOLOGY
Semester:
Date: MAY 1988
Author: ADAM SUGDEN

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APPROVED: 
Chairperson 

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CALENDAR DESCRIPTION

PAPER TECHNOLOGY I

PPE 240-3

Course Name

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PHILOSOPHY/GOALS;

This is the first course dealing with the technology of papermaking processes. The history of papermaking is briefly reviewed, highlighting technological developments that have led to today's processes. Modern processes for stock preparation, stock proportioning and paper colouring are studied. Wet-end technology including stock delivery and distribution, headbox and slice design and their operation are studied in detail. The operation of fourdriniers, twin-wire formers and cylinder machines is thoroughly investigated. Aspects of wet-end stock balances and stock testing are included. Press section operations including wet press performance will be previewed.

METHOD OF ASSESSMENT (GRADING METHOD);

Students will be graded on the basis of their performance in three tests *tW* be given at appropriate intervals during the semester. Each of the tests will be of equal value. Letter grades will be assigned as follows:

A+ = 90-100%, A = 80-89%, B = 70-79%, C = 60-69%, R = less than 60%

Students having a final standing of "R" and who have a course average of at least 55% may be permitted to write a supplemental test covering the entire course.

TEXTBOOK(S);

There is no single text or reference book that is appropriate for this course. However, the general reference book (Smook, Handbook for Pulp & Paper Technologists) will be used throughout the course.

PPE 240

PAPER TECHNOLOGY I
(Paper machine wet-end technology)

OBJECTIVES:

The overall educational objective of this course is that the student will be able to demonstrate knowledge of the theory, practice and control of all aspects of wet-end paper technology. More specific objectives are as follows:

1. Demonstrate knowledge of the history of papermaking and of those technological developments leading to modern processes.
2. Demonstrate knowledge of the important aspects of stock preparation including refining, stock proportioning, blending, cleaning and storage.
3. Demonstrate knowledge of the nature, function and effect of non-fibrous additives used in papermaking.
4. Demonstrate ability to trace stock flow along the various types of paper machines.
5. Demonstrate knowledge of stock approach, dilution and distribution systems.
6. Demonstrate knowledge of headbox and slice design, their function and operation.
7. Demonstrate knowledge of dewatering theories, practice, control and effects on paper.
8. Demonstrate knowledge of the structure, function and effects on paper properties of forming fabrics.
9. Demonstrate knowledge of equipment used in and operation of single wire, twin-wire and cylinder machines.
10. Demonstrate awareness of nature and function of the wet-pressing operation.

NATURE OF PRESENTATION:

The course will be given for 3 hours per week using three single periods. The course material will mainly be presented in lecture format with problem sets and other materials used in support.

TOPICS COVERED:

WEEK	TOPIC
1.	Introduction to course and topics covered History of papermaking
2.	Spread of papermaking technology Development of processes
3.	Stock preparation overview Repulping Refining
4.	Stock preparation controls Stock proportioning
5.	Non-fibrous additives Retention of fines and additives Sizes, fillers etc.
6.	Sizes, fillers (continued) Test 1
7.	Paper colouring Dye types and functions
8.	Colour measurement and control
9.	Paper machine overview
10.	Approach flow system Flow measurement and control
11.	Flow spreaders Headboxes Test 2
12.	Slice design, operation and function Single-wire fourdrinier overview
13.	Forming fabrics Dewatering technologies
14.	Twin-wire machines Cylinder machines
15.	Review Test 3