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

COURSE OUTLINE

COURSE TITLE: PAPER TECHNOLOGY II

CODE NO.: PPE 340-5 SEMESTER!

PROGRAM: PULP AND PAPER ENGINEERING TECHNOLOGY


AUTHOR) KEVIN PEVATO

DATE: JANUARY 1992 PREVIOUS OUTLINE DATED: JANUARY 1991

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DEAN, SCHOOL OF SCIENCES & NATURAL  
RESOURCES

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DATE

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**TOTAL CREDIT HOURS: 80**

**PREREQUISITE(S):** Paper Technology I - PPE240

**I. PHILOSOPHY/GOALS:**

This course deals with papermaking technology from the press section through to the end of the dryer section.

The study of the press section will include pressing objectives, theory, interactions involved in press dewatering, the effect of pressing on product quality, and methods to optimize press performance.

The study of the drying section includes the theoretical aspects of water removal through evaporative drying. Heat transfer and mass transfer principles will be studied. In addition, the steam and condensate system, pocket ventilation, hood ventilation, and heat recovery will be investigated. Paper machine drying, rate will be calculated. Alternative methods of drying will be outlined.

A course manual will be used extensively. G. Smook's book will supplement the manual, so, be prepared to bring both resource material to each class.

**II. STUDENT PERFORMANCE OBJECTIVES:**

Upon successful completion of this course, the student will:

- V.\*- Calculate paper machine production rate using the equation and chart method.
2. Calculate water-to-fibre ratio for use in mass balance calculations.
3. List primary and secondary pressing objectives.
4. Explain four phases of water removal in the press nip.
5. Explain the interactions involved in press dewatering as they relate to; web variables, felt variables, and machine variables.
6. Describe the effect of pressing on product quality.
7. List and explain optimization methods in the press section.
8. List primary and secondary drying objectives.
9. Explain four phases of water removal in the dryer section.
10. Calculate the paper machine drying rate.
11. Explain interactions involved in evaporative drying as they relate to; web variables, felt variables, and machine variables.
12. Describe the effect of drying on product quality.
13. List and explain alternative methods of drying.
14. Outline future trends in pressing and drying.

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**III. TOPICS TO BE COVERED:**

**A. INTRODUCTION**

- Scope of the course
- Review of Paper Technology I

**B. PRODUCTION RATE AND MASS BALANCE CALCULATIONS**

**C. PRESSING**

- Pressing Objectives
- Press theory - 4 phases of water removal
- Interactions involved in press dewatering
  - web variables
  - felt variables
  - machine variables
- The effect of pressing on product quality
- Optimization of the Press Section

**D. DRYING**

- Drying Objectives
- Drying Theory - 4 phases of water removal
- Paper Machine Drying Rate
- Paper Machine Drying Zones
- Interactions that Impact Paper Drying
  - web variables
  - felt variables
  - machine variables
- The effect of drying on product quality
- Alternative methods of drying

**E. FUTURE TRENDS**

- Press Section
- Dryer Section

A detailed list of the topics to be covered can be found in the Table of Contents section of the course manual.

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**IV. EVALUATION METHODS:**

The student's performance in this course will be assessed on the basis of his or her performance on three (3) tests and one (1) term report, each of which will be worth 25% of the final grade. Letter grades will be assigned as follows:

A = 80% - 100%  
B = 70% - 79%  
C = 60% - 69%  
R = -59%

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 content.

**V. REQUIRED STUDENT RESOURCES:**

Paper Technology II (PPE340) - Study Guide, written by Kevin Pevato. Available in the College Bookstore.

Handbook for Pulp and Paper Technologists, G. A. Smook

**VI. ADDITIONAL RESOURCE MATERIALS:**

A detailed listing of additional resource material can be found in the course manual. Most of the listed references can be found in the College library.

**VII. SPECIAL NOTES**

Students with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.