

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 1991 PREVIOUS OUTLINE DATED: NOVEMBER 1984

APPROVED:
DEAR

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PAPER TECHNOLOGY II

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TOTAL CREDIT HOURS: 60

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 includes press configurations, press roll designs and materials, machine clothing design and construction, felt conditioning equipment and process and the theoretical aspects of water removal by pressing.

The study of the drying section includes the theoretical aspects of water removal through evaporative drying and the economy of drying will be studied. In addition, the technology of condensate removal systems, steam control, pocket ventilation, hood designs, steam economy, and heat recovery will be investigated.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course, the student will:

1. Explain the function of the press section of the paper machine.
2. Explain factors that impact the water removal process involved in pressing.
3. Explain the function of the drying section of the paper machine.
4. Explain factors that impact water removal involved in drying.
5. Outline methods to improve efficiencies of press and drying sections.

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III- TOPICS TO BE COVERED:

INTRODUCTION

- Scope of the course
- Review of Paper Technology I

PRESS SECTION

- Press Function
- Press Action
- Sheet Transfer from Wire to Press
- Press Types
- Press Arrangements
- Press roll design and materials of construction
- Wet Felt Manufacture and Usage
- Felt Conditioning and Cleaning
- Auxiliary Press Equipment
- Factors Influencing Press Performance
- Practical Press Operation
- Press Section Monitoring

DRYER SECTION

- Design and materials
- Configurations
- Dryer cylinders
- Dryer drive systems
- Steam and Condensate removal systems
- Dryer pocket ventilation
- Dryer fabric design and construction
- Steam Economy and Heat Recovery

COSTS OF WATER REMOVAL

- Cost/ton of paper produced
- Effect of increasing solids content in presses

ALTERNATIVE DRYING METHODS

- Infrared dryers
- Airborne dryers
- Air-through drying
- Microwave drying

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PPE340-5

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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 5.5% will be permitted to write a supplemental test covering the entire course content.

V. REQUIRED STUDENT RESOURCES:

Unfortunately, at the time of writing, there is no totally suitable textbook for this course. References will be made from sources listed in the resource section of this course outline.

VI. ADDITIONAL RESOURCE MATERIALS:

Smook, G.A. (1980), Handbook for Pulp & Paper Technologists, Joint Textbook Committee of the Paper Industry, Atlanta.

Albany International Corp. (1976), Paper Machine Felts and Fabrics, Albany International Corp., Albany, New York.

Atkins, John F. ed. (1979), The Paper Machine Wet Press Manual, Technical Association of the Pulp and Paper Industry, Atlanta.

MacDonald, Ronald G., Franklin John N., eds. (1970), Pulp and Paper Manufacture, Volume III Papermaking and Paperboard Making, Joint Textbook Committee of the Paper Industry, Atlanta.

Britt, Kenneth W., ed., (1970), Handbook of Pulp and Paper Technology, Van Nostrand Reinhold Company, New York.

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PPE340-5

COURSE NAME

CODE NO.

VI. ADDITIONAL RESOURCE MATERIALS: (cont'd)

Periodicals

Tappi Journal
Pulp and Paper Canada
Pulp and Paper

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.