

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

COURSE OUTLINE

COURSE TITLE: PAPER FINISHING
CODE NO. : PPE 365-4 SEMESTER:
PROGRAM: PULP AND PAPER ENGINEERING TECHNOLOGY
AUTHOR: KEVIN PEVATO
DATE: MAY 1991 PREVIOUS OUTLINE DATED: JULY 1990

APPROVED: 
BEAN  DATE  <*111

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TOTAL CREDIT HOURS: 60

PREREQUISITES(S): PPE 340

I. PHILOSOPHY/GOALS:

This course deals with the final steps in the manufacture of paper and includes aspects of size press operations, on-manufacture coating, calendering, reeling and roll winding. Paper machine drive systems and controls will be studied as will other operations such as re-winding, slitting, sheeting, wrapping and storage. Aspects of quality control of the paper and specific tests used to provide this information will be dealt with. State-of-the-art on-line monitoring and control systems for moisture, basis weight and caliper will be studied.

II. STUDENT PERFORMANCE OBJECTIVES:

On completion of the course, the student will be conversant with all the various aspects of the paper finishing operations in a paper mill. The student will be able to describe and compare different techniques for calendering, will be able to analyze the different variables involved in calendering and will understand the different components of the reeling stage of papermaking. Sizing and coating systems will be studied and compared in terms of economy and effectiveness. The student will be able to describe the types of on-line apparatus used and their operating principles.

Various calender stack combinations will be studied such as on-line and off-line calenders and supercalenders. Smoothness measuring devices such as Bendtsen, Sheffield, Parker Print-Surf will be discussed and compared. Printing press requirements are compared.

Paper machine winders are discussed. The fundamentals of tension Nip and Torque are developed. The student will be able to plot winder time vs. paper velocity time cycles for a variety of winder situations.

This course also covers in detail the various related operations involved in winding, slitting, sheeting, wrapping and storage will all be evaluated. The student will be able to describe these processes as well as analyze their importance in the whole papermaking operation. Aspects of quality control of papermaking will be studied and the student will be able to recount the underlying principles and importance of each of several examples.

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III. TOPICS TO BE COVERED:

The various topics covered in this course are detailed in the table below:

TOPIC NUMBER	TOPIC
1.	INTRODUCTION <ul style="list-style-type: none">- Scope of the course- Review of paper manufacturing to the dryer exit- Reasons for finishing paper
2.	CALENDERING <ul style="list-style-type: none">- Its effect on paper, the theory of calendering- Calender variables versus sheet variables<ul style="list-style-type: none">-temperature-pressure-moisture content-controls- Calender configurations and equipment- Power consumption and costs
3.	ON-LINE CONTROL EQUIPMENT <ul style="list-style-type: none">- Moisture profile- Basis weight- Caliper (thickness)
	REELING <ul style="list-style-type: none">- Equipment involved- Controls and Tests- Effects of sheet variables on roll formation

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III. TOPICS TO BE COVERED: (cont'd)

TOPIC NUMBER	TOPIC
5.	SIZING AND COATING SYSTEMS <ul style="list-style-type: none">- Size press operations and design- On-machine coating- Off-machine coating- Coating requirements- Control systems and tests- Effect of sheet properties on sizing and coating
6. *	PAPER MACHINE DRIVE SYSTEMS <ul style="list-style-type: none">- Mechanical drives- Electric sectional drives- Control systems- Draws '
1.	WINDING, SLITTING AND SHEETING <ul style="list-style-type: none">- Customer requirements(Finish vs. Printing Presses)- Equipment used- The role of cores- Sheet sizes- Control mechanisms
8.	WRAPPING AND STORAGE <ul style="list-style-type: none">- Equipment design and operation- Processes used- Conditions of storage- Warehousing and inventory control- Shipping and computer networks for customer service
9.	QUALITY CONTROL <ul style="list-style-type: none">- Specifications- Physical and optical testing- Complaints- Settlements of claims

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IV. EVALUATION METHODS:

Students will be graded on the basis of their performance on three tests of which each one is worth one third of the final grade for the course. Letter grades will be assigned as follows:

A+ = 90% or higher A = 80-89% B = 70-79%
 C = 60-69% R = 59% or less

Students having a final standing of "R" and who have a course average of at least 55% and have attended at least eighty percent (80%) of the scheduled lecture hours will be permitted to write a supplemental test.

V. REQUIRED STUDENT RESOURCES:

"Paper Finishing", Prepared by Roger J. Kelly (available in College Bookstore).

Handbook for Pulp and Paper Technologists, G. A. Smook, Joint Textbook Committee of the Paper Industry, TAPPI 1982.

VI. 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.