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SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: PAPER FINISHING

Code No. PPE 365-4

Program: PULP AND PAPER ENGINEERING TECHNOLOGY

Semester;

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New: Revision:

APPROVED, Chairperson '2%*'^////£••
Date

CALENDAR DESCRIPTION

Paper Finishing	PPE 365-4
Course Name	Course Number

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,

METHOD OF ASSESSMENT (GRADING METHOD):

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 = 79+% B = 70-79% C = 59-69% R = -59%

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

TEXTBOOK(S):

Unfortunately, at the time of writing, there does not exist a suitable textbook for this course. However, there are a number of extremely useful reference books available and a list of these will be available at the beginning of the semester.

PPE 365-4 PAPER FINISHING

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.

Paper machine drives will be studied and compared in terms of their control, effectiveness and current use. The various 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 analyzing 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.

NATURE OF PRESENTATION:

This course will be give four 1-hour periods per week and will be based on theory only. It is hoped that, when feasible, outside speakers will be invited to participate in this course. It is planned that one field trip will be made early in the semester in order to ensure that all students have a common basis of understanding of the processes involved.

TOPICS COVERED;

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

Topic Number	Topic
1.	INTRODUCTION - Scope of the course - Review of paper manufacturing to the dryer exit - Reasons for finishing paper

Topic

CALENDERING

- Its effect on paper, the theory of calendering
- Calender variables versus sheet variables
  - -temperature
  - -pressure
  - -moisture content
  - -controls
- Calender configurations and equipment
- Power consumption and costs

ON-LINE CONTROL EQUIPMENT

- Moisture profile
- Basis weight
- Caliper (thickness)

REELING

- Equipment involved
- Controls and Tests
- Effects of sheet variables on roll formation

SIZING AND COATING SYSTEMS

- 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

PAPER MACHINE DRIVE SYSTEMS

- Mechanical drives
- Electric sectional drives
- Control systems
- Draws

Topic

WINDING, SLITTING AND SHEETING

- Customer requirements
- Equipment used
- The role of cores
- Sheet sizes
- Control mechanisms

WRAPPING AND STORAGE

- Equipment design and operation
- Processes used
- Conditions of storage
- Warehousing and inventory contro
- Shipping

QUALITY CONTROL

- Specifications
- Physical and optical testing
- Complaints
- Settlements of claims