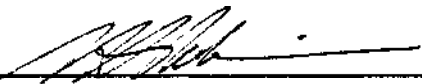


SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: PROCESS CONTROL
CODE NO.: PPE 344-5 **SEMESTER:**
PROGRAM: PULP St PAPER/WATER RESOURCES ENGINEERING TECHNOLOGY
AUTHOR: JOHN K. THEIL
DATE: NOVEMBER 19 9 0 **PREVIOUS OUTLINE DATED:** SEPTEMBER 19 89

APPROVED:



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DATE

PROCESS CONTROL

PPE 344-5

COURSE NAME

CODE NO.

TOTAL CREDIT HOURS: 60

PREREQUISITE^) : HYD22 0 HYDRAULICS

I. PHILOSOPHY/GOALS:

The course is designed to provide theoretical and practical knowledge of the fundamentals of process control systems. Particular emphasis is placed upon the functioning of the various components, including measuring devices and transducers, transmitters, controllers, and final control elements.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will be able to:

1. Describe applications of process control and recognize the basic control types.
2. Identify the functions of the components of a control loop and explain the difference between an open loop and a closed loop control using block diagrams.
3. Define and apply the principles of hydrostatics and fluid mechanics, and to use these concepts in appropriate applications.
4. Identify the characteristics and applications of various pressure measuring elements.
5. Select and apply a variety of pressure and level measuring devices.
5. Describe the function of a transmitter.
7. Describe the hardware used in pneumatic to electric and electric to pneumatic switching.
3. Explain the operation of an on-off control loop.
9. Describe the general characteristics and operation of the proportional control mode.
10. Define the purpose of and explain the operation of a control valve, identify control valve components, and select and specify control valves for various processes.

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III. TOPICS TO BE COVERED:

TOPICS	HOURS
1. Process Control Applications	3
2. Control Loop Components	
3. Open and Closed Loop Control	
4. Principles and Applications of Hydrostatics and Fluid Mechanics	
5. Characteristics and Applications of Pressure and Level Measuring Devices	
5. Transmitter Function and Input/Output Calculations	2
7. Pneumatic/Electric Switching Hardware	1
3. On/Off Control	5
9. Proportional Control	6
10. Control Valve Characteristics and Applications.	
	31
Laboratory Exercises	20
Interim Tests/Final Examination	6
Review	3

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IV. METHOD OF ASSESSMENT:

Assignments/Laboratory Exercises	30%
Interim Tests 2 @ 20%	40%
Final Examination	30%

GRADING

A+	90-100%
A	80-89%
B	70-79%
C	50-69%

A passing grade will be based on a Minimum *passing* grading of 50%. Students obtaining a composite grading of 59% may be allowed to complete a supplementary examination.

V. REQUIRED STUDENT RESOURCES:

- Introduction to Process Control, Publication 105B by The Foxboro Company.
- Process Measurement Fundamentals, Vol. 1; by T.E. Collis, S.M. Eacho, J.P. Jerald, and M.K. Reardon; General Physics Corporation.
- Process Control Fundamentals; by Quintech Division of Lab-Volt.

VI. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY BOOK SECTION:

- Instrumentation, Third Edition; by F.W. Kirk and N.R. Rimboi. American Technical Publishers, Inc.
- Automation and Instrumentation, AWWA Manual M2, Second Edition, American Water Works Society.
- Process Instrumentation and Control Systems - Manual of Practice Mo. OM-c Water Pollution Control Federation.

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.