SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: AUTOMATED CONTROL SYSTEMS

CODE NO.: ELR 315 - 6

PROGRAM: ELECTRICAL TECHNOLOGY

SEMESTER: SIX

DATE: JANUARY 1991

AUTHOR: ENO LUDAVICIUS

NEW: _____ REV.: X

APPROVED: L P Arquette 9/10/02
DEAN DATE

CALENDAR DESCRIPTION

AUTOMATED CONTROL SYSTEMS
COURSE NAME

ELR 315 - 6
COURSE NUMBER

PHILOSOPHY/GOALS:

THE STUDENT WILL DEVELOP THE UNDERSTANDING OF AUTOMATED CONTROL SYSTEMS & TOOLS FOR FACTORY AUTOMATION. THIS DEVELOPMENT WILL INCLUDE FLEXIBLE MANUFACTURING SYSTEM CONTROL WITH THE STATE OF THE ART HARDWARE AND SOFTWARE CONTROLLERS. THE STUDENT WILL ALSO INTERFACE COMPUTER CONTROL TO ROBOTIC WORKCELL.

METHOD OF ASSESSMENT (GRADING METHOD):

THE STUDENT WILL BE ASSESSED IN THE FOLLOWING MANNER:

1) THREE WRITTEN TESTS TOTALLING 45%.
2) ASSIGNMENTS & PROJECTS TOTALLING 55%.

TEXTBOOKS & JOURNALS

1) TAYLOR LADDER LOGIC DEVELOPMENT SERIES FOR PLC
2) AB MINI PLC 2/30 PROGRAMMABLE CONTROLLER MANUAL
3) PROGRAMMABLE CONTROLS - THE USER MAGAZINE
4) CAD/CAM & ROBOTICS BY KERRWILL PUBLICATION
5) IEEE JOURNAL OF ROBOTICS AND AUTOMATION
6) AMATROL MANUALS - HERCULES ROBOT & WORKCELL
7) AMERICAN ROBOT - MERLIN SYSTEM OPERATORS GUIDE
8) CONTROL ENGINEERING
9) CANADIAN ELECTRONIC ENGINEERING
10) COMPUTER INTEGRATED MANUFACTURING - By P.G. RANKY
11) INTRODUCTION TO CONTROL SYSTEMS TECHNOLOGY - By BATESON
12) PROCESS CONTROL INSTRUMENTATION TECHNOLOGY - By C.D. JOHNSON

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GENERAL OBJECTIVES

1) BLOCK 1 - OVERVIEW OF CONTROL SYSTEM TECHNOLOGY

1.1) EVALUATION OF CONTROL SYSTEMS.

1.2) TYPES OF CONTROL SYSTEMS.

1.3) MEASURING MEANS & CHARACTERISTICS.

1.4) CONTROL COMPONENTS & COMPUTERS.

2) BLOCK 2 - FLEXIBLE MANUFACTURING SYSTEM CONTROL

2.1) THE FLEXIBLE MANUFACTURING CONTROL CONCEPT.

2.2) FMS SYSTEM ARCHITECTURE.

2.3) FMS SYSTEM COMPONENTS & DEVICES.

2.4) FMS OPERATIONAL CONTROL.

3) BLOCK 3 - TOOLS FOR FACTORY AUTOMATED CONTROL SYSTEMS

3.1) PROGRAMABLE CONTROLLER SUPPORT SOFTWARE.

3.2) ALLEN BRADLEY CIM NETWORK.

3.3) MODICON 984 PLC CONTROLLERS AND FM1800 CELL CONTROLLER.

3.4) THE FIX - FULLY INTEGRATED CONTROL SYSTEM FROM INTELLUTION.

GENERAL INFORMATION

TIMETABLE

DAY	TIME	PLACE	ACTIVITY
MONDAY	1:30- 4:30	B104	LAB
WEDNESDAY	3:30- 4:30	B104	LECTURE
THURSDAY	10:30-12:30	B104	LECTURE & LAB

EVALUATION

ACTIVITY	DAY	TIME	PLACE	%
TEST #1 (BLOCK #1 MATERIAL)	FEB. 6/91 (WEDNESDAY)	3:30-5:30	B104	15
TEST #2 (BLOCK #2 MATERIAL)	MAR. 11/91 (MONDAY)	1:30-4:30	B104	15
TEST #3 (BLOCK #3 MATERIAL)	APR. 22/91 (MONDAY)	1:30-4:30	B104	15

ASSIGNMENT TOPICS

1) PLC CONTROL - MODICON 984 HARDWARE & SOFTWARE
   - ALLEN BRADLEY 2/02,16,17 HARDWARE & SOFTWARE

2) ROBOT ARM & WORKCELL - AMATROL HERCULES VIA A/B 2/30 PLC
   - MERLIN
   - SIMULATION SOFTWARE

3) INSTRUMENTATION - FOXBORO 760 SERIES CONTROLLER

4) HYDRAULIC SERVO SYSTEM - AMATROL 810 SERIES

5) PNEUMATIC CONTROL VIA PLC CONTROLLER - AMATROL

6) PID CONTROL VIA PLC CONTROLLER - ALLEN BRADLEY