Course Number and Name
BEI701 - Logic and Distributed Control System

Credits and Contact Hours
3 and 45

Course Coordinator’s Name
Ms B.Kalaiselvi

Text Books and References

TEXT BOOKS:

REFERENCES:
1. T.A. Hughes, Programmable Controllers, Fourth edition, ISA press, 2005

Course Description
- To give an introductory knowledge on Programmable Logic Controller (PLC) and their Programming languages
- To give adequate knowledge about applications of PLC
- To give basic knowledge about Computer Controlled Systems
- To give basic knowledge on the architecture and local control unit of Distributed Control System (DCS)
- To give adequate information with respect to interfaces used in DCS

Prerequisites
Control System

Co-requisites
NIL

required, elective, or selected elective (as per Table 5-1)

Selected Elective

Course Outcomes (COs)

CO1: To get an introductory knowledge on PLC and Programming Languages
CO2: To get Adequate knowledge about application of PLC
CO3: To get basic knowledge about computer controlled systems
CO4: To get basic knowledge on the architecture and local control unit of Distributed Control System
CO5: To get an adequate knowledge application of PLC
CO6: To understand the systems used in distributed control systems

Student Outcomes (SOs) from Criterion 3 covered by this Course

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List of Topics Covered

**UNIT-I  PROGRAMMABLE LOGIC CONTROLLER**
Evolution of PLCs – Components of PLC – Architecture of PLC – Discrete and analog I/O modules – Programming languages -Ladder diagram – Function block diagram (FBD) - Programming timers and counters

**UNIT-II APPLICATIONS OF PLC**
Instructions in PLC – Program control instructions, math instructions, data manipulation Instructions, sequencer and shift register instructions – Case studies in PLC

**UNIT-III COMPUTER CONTROLLED SYSTEMS**
Basic building blocks of computer controlled systems – Data acquisition system – Supervisory control – Direct digital control- SCADA: - Hardware and software, Remote terminal units, Master Station and Communication architectures.

**UNIT-IV DISTRIBUTED CONTROL SYSTEM**
DCS – Various Architectures – Comparison – Local control unit – Process interfacing issues – Communication facilities

**UNIT V  INTERFACES IN DCS**
Operator interfaces - Low level and high level operator interfaces – Displays - Engineering interfaces – Low level and high level engineering interfaces – Factors to be considered in selecting DCS – Case studies in DCS