

**EE514 Programmable Logic Controller and their Applications 3 1 - 4 4**

**UNIT – I :** PLC Basics: PLC system, I/O modules and interfacing, CPU processor, programming equipment, programming formats, construction of PLC ladder diagrams, devices connected to I/O modules. PLC programming: Input instructions, outputs, operational procedures, programming examples using contacts and coils, drill press operation.

**UNIT – 2 :** Digital logic gates, programming in the Boolean algebra system, conversion examples. Ladder diagrams for process control: Ladder diagrams and sequence listings, ladder diagram construction and flow chart for spray process system.

**UNIT – 3 :** PLC Registers: Characteristics of Registers, module addressing, holding registers, input registers output registers. PLC Functions: Timer functions and industrial applications, counters, counter function industrial applications, arithmetic functions, number comparison functions, number conversion functions

**UNIT – 4 :** Data Handling functions: SKIP, Master control relay, Jump, Move, FIFO, FAL, ONS, CLR and Sweep functions and their applications. Bit pattern and changing a bit shift register, sequence functions and applications, controlling of two axis and three axis Robots with PLC, Matrix functions.

**UNIT – 5 :** Analog PLC operation: Analog modules and systems, Analog signal processing, multi bit data processing, analog output application examples, PID principles, position indicator with PID control, PID modules, PID tuning, PID functions , introduction to distributed control systems

**Text Books :**

1. John W. Webb and Ronald A. Reiss, "Programmable Logic Controllers– Principle and applications" 5<sup>th</sup> ed., PHI.
2. JR. Hackworth and F.D. Hackworth, "Programmable Logic Controllers– Programming Method and applications", Jr. Pearson, 2004.