



Department of Electrical and Control Eng.



# Lab 105

## Digital Control

Capacity: 20 Students



This laboratory attempts to clarify some of the concepts of digital control and digital circuit applications. Using advanced digital design computer software, students gain the knowledge of the various methods of digital circuit integration, circuit analysis and also power system analysis. Practical digital applications are investigated using microcontroller kits, circuit kits, programmable logic controllers and robotic equipment.



### LABORATORY EQUIPMENTS

- Lab-Volt 32 Bit Microprocessor Trainer.
- DC Motor Control Simulator.
- Traffic Control Simulator.
- Washing Machine Simulator.
- Mentor Robot Arm.
- 7 Dell OptiPlex 760, Intel Core2Duo 3.0Ghz desktop computer And LCD 19" monitors.
- Robotic Arm.
- 2 Wheel Drive Robot.
- Omni Directional Wheel Robot.
- Microprocessor Development Boards (microprocessor ATmega- Arduino- Signal Conditioning Circuit-Encoder).



### MAJOR EXPERIMENTS

- ✓ Amplifier Circuits.
- ✓ Flasher Circuits.
- ✓ Microcontroller as input device.
- ✓ Operation of a 7-segements display/ LCD.
- ✓ Analogue to Digital Converter Circuit.
- ✓ AVR Microcontroller Interrupts.
- ✓ Basic robot manipulator arm action and fundamental robotic equipment.
- ✓ Timer and Timer Interrupt.
- ✓ Operation of Keypad/7-segement/LCD Display using Arduino.
- ✓ Load Flow Analysis & Calculations for power system analysis study.
- ✓ Economic dispatch for power system analysis study.



### The Laboratory Serves the Following Courses

Course No.	Course Title	Semester
EE413	Micro-Processor Based	8
EE514	Robotics	9/10
EE441	Power Systems 1	6