

DIGITAL DESIGN LAB

Introduction

This Lab covers the topics on

- Combinational and sequential logic circuits
- Programmable logic devices
- State table and state diagrams
- Arithmetic operations and algorithms
- Algorithmic state machines
- RTL level realization of digital systems
- FPGA digital IC's hardware kit Implementation

Scope of the Lab

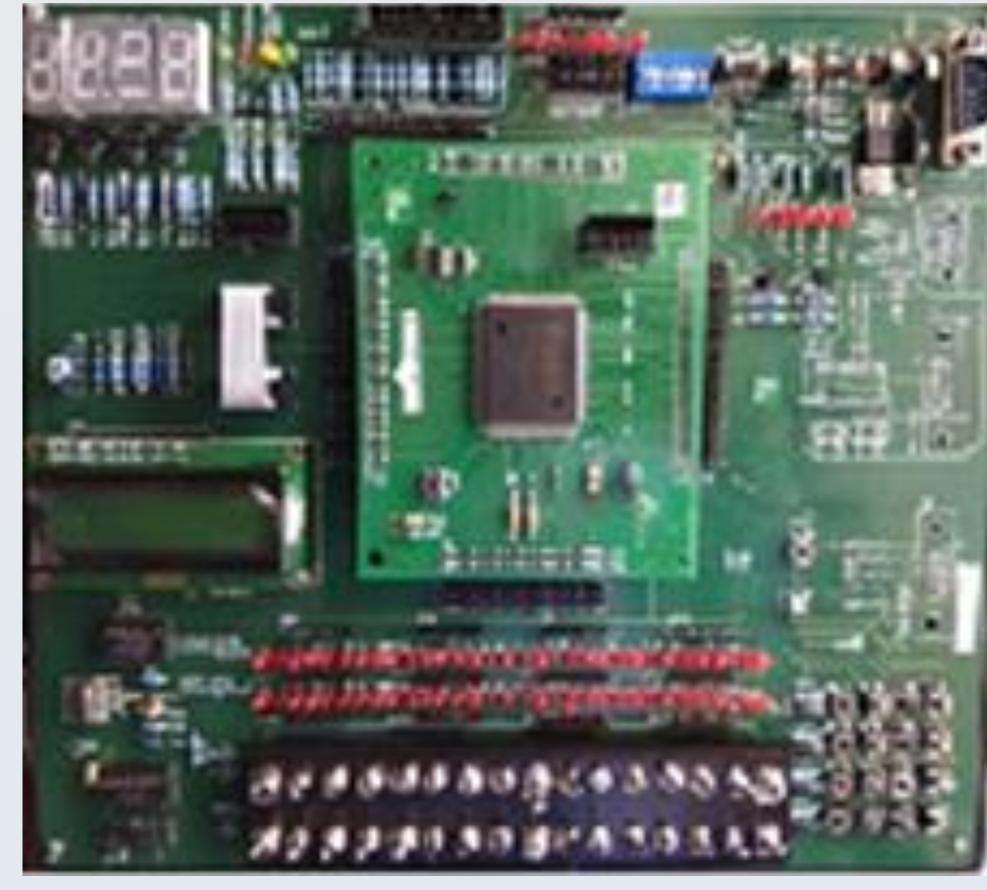
- •The objective of the lab is to impart knowledge of the basic tools for the design of digital circuits and to provide methods and procedures suitable for a variety of digital design applications.
- •Laboratory exercises on combinational and sequential logic circuits using digital ICs and FPGAs will be covered in labs.

Equipment Setup

Universal Digital Lab Trainer Kit



FPGA Development Board



Analog Discovery Digital IC Tester





Xilinx ISE

Hardware

Software

- Universal digital lab trainer
 PHY-1002 kit
- FPGA kit
- Digital IC tester
- Analog discovery kit
- PHY-451 universal digital lab trainer kit

List of experiments

- Implementation of Boolean functions using logic gates
- Adders and subtractors
- BCD Adder
- Decoders, multiplexers and demultiplexers
- Comparators and Arithmetic logic unit
- Latches and flip-flops
- counters
- Shift Registers
- Gate level modelling in verilog and FPGA kit implementation
- Verilog: Instantiation and testbench
- Data-flow modelling in Verilog and FPGA kit implementation
- Behavioral modelling in verilog and FPGA kit implementation

Application Areas

- Communication
- Image Processing
- Control Engineering
- Cryptography
- Fuzzy Logic
- Robotics
- Prototyping

Lab Technician

- Mrs. B. Krishnaveni
- Mr. Khadar Bhasha

Courses to cater

Course Title: Digital Design (CS/EEE/ECE/INSTR F215)

- BE(H) Computer Science
- BE (H) Electrical and Electronics
- BE (H) Electronics and Communication
- BE (H) Electronics and Instrumentation



