Digital Circuits for Electricians

This four-day introductory course begins with a look at fundamentals of digital electronics. A brief review of digital numbering systems and digital device construction is provided. An overview of basic logic gates is covered. The use of flip-flops, multivibrators, counters and decoders is emphasized. An introduction into the function of a microprocessor is also presented, as well as analog and digital converters. Troubleshooting digital circuits is also included in the course.

I. Introduction to Digital Electronics
   · Analog vs. Digital Devices
   · Number Systems
   · TTL and CMOS IC’s

II. Basic Logic Gates
   · AND Circuit
   · OR Circuit
   · NOT Circuit
   · NAND Circuit
   · NOR Circuit
   · XOR Circuit
   · XNOR Circuit
   · Boolean Expressions

III. Flip-Flops and Multivibrator Circuits
   · Data flip-flop
   · J-K flip-flop
   · R-S flip-flop
   · Monostable Multivibrators
   · Astable Multivibrators

IV. Counters and Decoders
   · Decade Counters
   · Decoders

V. Solid State Switches and Drivers
   · Solid State Switches
   · Array Drivers

VI. Introduction to Microprocessor
   · What is a Microprocessor
   · Microprocessor Internal Construction
   · Microprocessor Uses

VII. Interfacing Digital and Analog
   · OPAMP Circuits
   · Analog to Digital Conversion
   · Digital to Analog Conversion

VIII. Troubleshooting Techniques
   · Logic Probes and Pulsers
   · Multi-Point Logic Testers