



Digital Electronics

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COURSE CONTENT

Aim

To provide a working knowledge of switching devices, digital electronics, logic operation, flow charts and task specification.

Pre-requisites

Suited to those personnel who require training towards multi-discipline engineering and carry out routine fault finding and rectification tasks on digital circuitry.

Course Duration

The course is of five days in duration.

Optimum Number

Maximum of 8 delegates per course.

Training Aids

Power Point and Information hand-outs.

COURSE OBJECTIVES

- Understand the operation and application of transistors used as switches and multivibrators in digital circuitry.
- Demonstrate knowledge of counters, ring counters, pulse integrating and rate measuring circuitry.
- Understand the application of discrete components and integrated circuits, logic gates, positive and negative logic and the development of logic control circuitry.
- Describe the specification requirements for a digitally controlled process system and the creation of a flow chart.

COURSE SYLLABUS

Logic Functions	Basic Logic Gates and Truth Tables. Derived Gates. The Comparator. Addition of Binary Numbers Combinational Logic Circuits. TTL and CMOS Logic Gates IC Pin-Connections.
Multivibrators	Transistor as a Switch. Propagation Delay. Clock Signals. S-R Flip-Flops. Clocked S-R Flip-Flops. D Type Flip-Flops. J-K Type Flip-Flops. Master and Slave Flip-Flops. Preset and Clear Inputs. 555-Timer
Logic Families	Type of Logic Families. Transistor Logic. Wired OR Networks. Sinking and Sourcing. Schottky TTL Complementary MOS Logic.
Boolean Algebra	Basic Rules of Boolean Algebra. Theorems of Boolean Algebra. Applications of Boolean Algebra. Simplifying Logic Circuits
Registers and Counters	Storage Registers PIPO. Shift Registers. Asynchronous or Ripple Through Counters. Synchronous or Gated Counters. Ring Counters. Johnson or Twisted Ring Counters.
Interface Circuits	Digital to Analogue Converters. Analogue to Digital Converters. Interfacing Analogue and Digital Circuits.

**Data Handling
Circuits**

Decoders.
Encoders.
Multiplexers.
Parallel to Serial Conversion
Demultiplexers.

Glossary of Terms

Dates available on request