

# INSTRUMENTATION & ELECTRONIC COURSES

## ADVANCED DIGITAL CIRCUITS (IE4A)

### OBJECTIVE:

Students will learn how to design practical digital systems, how to use modern CAD tools, learn the electrical characteristics of CMOS and TTL logic gates and should understand how these devices function in a typical application circuit and finally gain experience with a variety of standard digital memory circuits and subsystems.

### WHO SHOULD ATTEND?

This course is intended for Engineers & highly qualified technicians with some experience in Digital Circuits and Control. Electrical engineers and practicing engineers desiring to enhance their knowledge in this important field should plan to attend.

### COURSE CONTENT:

- Introduction. Overview of digital concepts
- Review of Boolean Algebra and combinational logic design
- Timing in combinational circuits, Loading, Noise Margins, Logic gate Fanout, Timing hazard
- Programmable logic: PLDs, FPGAs, etc.
- Practical logic design: data books, CAD tools, documentation
- MSI and VHDL implementations of building block components: decoders, Muxes, tri-state logic, adders, etc.
- Design examples using combinational components
- Review of sequential logic elements and systems: flip-flops, counters and shift-registers
- Clocked synchronous state machines
- Synchronous design using state machines
- Practical timing considerations and designs using VHDL

- Memory components (ROM, SRAM, DRAM)
- Digital-to-analog converter
- Analog-to-digital converter

### Duration: 5 Days

Date:	Venue:	Cost:
Jan 3-7	Dammam	SR 7,000
Jun 6-10	Abha	SR 8,000
Dec 5-9	Dammam	SR 7,000