CTC

CTC 212 Computer Organization and Design 4.0 UNITS

The operation of Flip-Flops as memory elements and counter analysis of Ripple/Synchronous mod counters are covered as building blocks for future design application. The major emphasis on counters is on the design of irregular and truncated counters using D and J-K Flip-Flops and integrated circuit applications of Up/Down counters and dividers. Also includes a coverage of timers, oscillators, and three-state operation. Registers are covered and include counting (Ring and Twisted Ring) shifting (Left/Right) and timing applications. The latter part of the course is devoted to arithmetic applications including 2?s complement adders and subtractors with overflow and underflow detection, and BCD arithmetic and arithmetic/logic I.C. units. Computer instructions, timing and control, executions of instructions, and designs of a basic accumulator-based computer are also covered. The laboratory exercises are organized to support the above theory and to enable students to design, assemble, and test applications constructed with MSI/LSI chips.

CTC 221 Microprocessor/ Microcomputer System 4.0 UNITS

Presents the architecture and operation of the microcomputer. Topics include an introduction to the 8086 microprocessor including its architecture, operation, and instruction set. The instruction set is studied through programming examples. Interfacing to the 8086 microprocessor is thoroughly studied. Input/output port configuration and interrupt management are introduced and used in numerous design projects. The laboratory experiments consist of designing projects. Students are exposed to projects that include solving both software and hardware issues. The tools used include a PC loaded with an 8086 assembler and connected serially to a SDK-86 kit. Laboratory experiments cover an 8086 arithmetic program, accessing data in memory, using a PC to write a program with an assembler, generating digital waveforms, nested loops programming, reaction time programming, using D/A converters with microprocessors and vector graphics.