

WITH EFFECT FROM THE ACADEMIC YEAR 2012-2013

EE 304

**DIGITAL ELECTRONICS AND LOGIC DESIGN
(Common to IE & EEE)**

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessional	25 Marks

UNIT-I

Boolean Algebra and combinational logic AND, OR and NOT operations, Laws of Boolean Algebra, minimization of Boolean expressions, Truth tables and maps sum of products and product of sums -map method of reduction, incompletely specified functions multiple output minimization.

UNIT-II

Tabular minimization, Digital logic families and IC's, Characteristics of Digital IC's, Introduction to RTL, DTL, TTL, CMOS, ECL families, Details of TTL logic family -totem pole, open collector outputs. Wired AND operation, comparison of performance, TTL subfamilies, multiplexer and de-multiplexer, encoder and decoder, code converters, implementation of combinational logic using standard logic gates and multiplexers.

UNIT-III

Binary arithmetic and circuits -Half and Full adder- subtractor and Magnitude comparator, number complements-two's complement arithmetic, carry look ahead adder, decimal numbers and their codes, BCD and Excess-3 arithmetic.

UNIT-IV

Synchronous Sequential Circuits -Basic latch circuit -debouncing switch -SR., JK, D and T flip-flops-truth table and excitation table -ripple and synchronous counters up/down counter -general BCD counter- Counter decoding-shift registers, ring counters.

UNIT-V

Design of Digital Systems -Concept of state. State diagram-design of counters Sequence detector and generators -Design procedure, synthesis' using D, JK, T flip-flops -applications of registers -concepts of programmable, logic -PROM, PLA, PAL.

Suggested Reading:

1. Donald Pleach / Albert Paul Malvino / Goutam saba "Digital Principles and Applications " McGraw- Hill, 2006.
2. Tocci & Widmer-Digital Systems-Pearson Education-Eighth Edition, 2003.
3. Morris Mano M. -Digital Design, Prentice Hall of India, Third Edition, 2002.
4. B. Somnath Nair, Digital Electronics and Logic Design, Prentice Hall, India, 2002.