

## Approval: 1<sup>st</sup> Convocation Adhoc Meeting

**Course Name:** Digital Electronic Circuits  
**Subject Code:** EE - 208  
**Credits :** 3-0-03  
**Prerequisites**  
**Students intended for:** B.Tech.  
**Elective or Compulsory**  
**Semester:** Odd/Even

### **Course contents:**

#### **Unit 1: Number system**

Binary Numbers, Octal Numbers, Hexadecimal Numbers, Complement, Signed Binary Numbers Addition and Subtraction

#### **Unit 2: Logic Gates and Boolean Algebra**

Digital Logic Gates, Basic Theorems and Properties of Boolean algebra, Boolean Functions, Minterms and Maxterms, Sum of Products and Product of Sums

#### **Unit 3: Minimization of Logic functions**

Karnaugh map method, Simplification of logic expressions, two variable, three variable, four variable etc., Implementation of logic functions

#### **Unit 4: Combinational Circuits :-**

Design of Adders, Subtractor, Multiplier, Encoder & Decoder, Multiplexer & Demultiplexer, and their use in logic synthesis, Arithmetic circuits, Seven-segment and alphanumeric display design.

#### **Unit 5: Sequential Circuits**

Latch, RS, JK, Master Slave, D, and T flip flops Finite state machines, State reduction

#### **Unit 6: Registers and Counters**

Registers, shift registers, Counters, Asynchronous Counters, Synchronous Counters, Design of counters, design of other sequential circuits.

#### **Unit 7: Memory and Programmable Logic devices**

#### **Unit 8: Digital Integrated Circuits**

### **Textbooks**

1. Mano, M.M. and Ciletti, M.D., "Digital Design", 4th Ed., Prentice-Hall.
2. Floyd, T.L., "Digital Fundamentals ", 8th Ed., Pearson Education.

### **Other Textbooks**

1. Balabanian, N. and Carlson, B., "Digital Logic Design Principles", John Wiley & Sons.
2. Jain, R.P., "Modern Digital Electronics", 3rd Ed., Tata McGraw-Hill. John F.
3. Wakerly , "Digital Design Principles and Practices," Prentice Hall.