

# ENG103 Digital Electronics Design

**Level:** 1

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY SEMESTER

## **Synopsis:**

Upon the completion of the Digital Electronics Design course, students will be able to perform analysis and design of digital circuits. The course teaches the principles of digital circuit components that are the basic building blocks, and also the application of appropriate mathematical methods for modeling components and circuits.

## **Topics:**

- Introductory concepts, number systems and codes
- Describing logic circuits, combinational logic circuits
- Flip-flops and relative devices
- Digital arithmetic: Operations and circuits
- Counters and registers
- MSI logic circuits
- Memory Devices
- Programmable logic device architectures

## **Textbooks:**

Ronald Tocci, Neal Widmer, and Greg Moss,: Digital Systems: Principles and Applications  
(eTextbook) 12/E Prentice-Hall Pearson  
ISBN-13: 978129162010-AA

Ronald Tocci, Neal Widmer, and Greg Moss,: Digital Systems: Principles and Applications  
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ISBN-13: 978129162010

**Learning Outcome:**

- Give the conversion from one number system to another.
- Execute arithmetic operation on binary numbers.
- Use Boolean algebra theorems and Karnaugh maps to simplify logic circuits.
- Recall the operation of flip-flops and basic logic circuits.
- Sketch the timing diagram.
- List the truth table for logic circuits.
- Design synchronous / asynchronous digital circuits.
- Implement logic expressions using logic gates/ multiplexer/ encoder/ decoder.

**Assessment Strategies:**

<b>Continuous Assessment Component</b>	<b>Weightage (%)</b>
CLASS TEST	10
CLASS TEST	10
LAB TEST	10
<b>Sub-Total</b>	<b>30</b>

<b>Examinable Component</b>	<b>Weightage (%)</b>
Written Exam	70
<b>Sub-Total</b>	<b>70</b>

**Weightage Total** **100**