

Course Code	Course Name	Credits
26PH913	DIGITAL ELECTRONICS	04

Course Objectives

- The student should learn fundamental components used in a Digital Computer which is essential for the programme.

Learning Outcomes

Upon successful completion of this course it is intended that a student will be able to:

- Understand the basic knowledge of different numbers methods.
- Understand about basic logic gates
- Find out the Boolean algebra and combinational logic circuits, Sequential circuit.

Unit 1 - (12 Hrs.)

Number Systems and Codes: Introduction to Number Systems-Types-Decimal, Binary, Octal, Hexa decimal- Conversion from one number system to others-Binary arithmetic operations: Binary Addition- Binary subtraction- Binary multiplication and division-1's complement and 2's complement, The 9's and 10's Complements-Binary Codes: BCD codes-Excess-3 code-Gray code, Weighted Binary codes-ASCII code.

Unit 2 – (12 Hrs.)

Logic Gates and Circuits: Boolean algebra and Logic gates - AND, OR, NOT, NAND and NOR gate-The Exclusive-OR gate–Application of XOR gate.

Unit 3 – (12 Hrs.)

Boolean algebra: Fundamentals of Boolean Algebra- Boolean functions- Laws and Theorems of Boolean Algebra- DeMorgan's theorems-Sum-of-Products-Karnaugh Map–Product-of-Sums simplification.

Unit 4 – (12 Hrs.)

Combinational Logic Circuits: Introduction to combinational Circuits-Adders-Half-Adder and Full-Adder-Subtractors - Half and Full Subtractor-BCD Adder- Decoders and Encoders.

Unit 5 – (12 Hrs.)

Sequential Circuits: Introduction-Flip-Flops: -RS Flip-Flop, D Flip-Flop, JK Flip-Flop, T Flip-Flop - Master-Slave Flip Flop- Counters – Asynchronous or Ripple Counter –Ring Counter – Shift Register.

Reference Books:

- “Principles of Digital Electronics”-Dr, K.Meena, PHI Learning Private Limited, 2012.
- Morris Mano “Digital Design”, 4th Edition, Prentice Hall of India Ltd, 2008.
- Thomas C. Bartee “Digital Computer Fundamentals”, 6th Edition, Tata Mc Graw Hill, New Delhi, 2011

Websites and eLearning Sources:

- <https://nptel.ac.in/courses/108105132>
- <https://youtube.com/playlist?list=PLBlnK6fEyqRjuzyQSEGGM-hvInZ4HY0is&si=3gPNopbJmP9pYXRV>



COs and Bloom's Taxonomy Mapping – 26PH913

Course Outcomes	On successful completion of this course, students will be able to	BTL
CO1	Recall and explain key concepts and definitions of the subject	K1, K2
CO2	Apply principles and methods to solve problems	K3
CO3	Analyze different approaches and system behavior	K4
CO4	Evaluate outcomes and applications critically	K5
CO5	Design innovative solutions based on subject knowledge	K6

BTL (Bloom's Taxonomy Level) - K1 – Remembering, K2 – Understanding, K3- Applying, K4 – Analyse, K5- Evaluate and K6 - Create

Relationship Matrix – 26PH913

Course Outcomes	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)						Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	
CO1	3	2	1	1	1	1	3	2	1	1	1	1	1.50
CO2	3	3	2	1	1	1	2	2	2	1	1	1	1.75
CO3	3	3	3	2	1	1	2	3	3	2	1	1	2.08
CO4	2	2	2	2	2	1	2	2	2	3	2	1	2.00
CO5	2	2	3	3	2	2	2	2	3	3	2	2	2.33
Total													1.93

Mean Score: 3- High, 2- Medium/Moderate, 1-Low

