Course Type	Course Code	Name of Course	L	T	P	Credit
ESC	NECE102	Digital Electronics	3	0	0	3

Course Objective

The objective of the course is to develop an understanding of digital electronics and its application which will be further useful to in the advanced courses of Electronics and Industrial Engineering.

Learning Outcomes

Upon successful completion of this course, students will:

- Gain information about the basic knowledge of digital electronics to design various types of digital circuits and systems.
- Learn how to analyse the performance and working of digital circuits.
- Develop their knowledge of digital electronics for industrial and robotic applications.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Number system, Logic gates, Boolean algebra, NAND and NOR implementation of logic functions. Determination of Boolean functions from Digital Circuits.	06	Acquire an understanding of number system, basic logic gates and their applications to develop digital circuits and systems.
2	Standard Representations of Logical Functions, SOP and POS form, Simplification of Logical Functions using K-map.	06	Acquire the knowledge to represent the logic functions in standard form and its minimization.
3	Combinational Logic Circuit: Adder, Subtractor, Magnitude Comparator, Code converters etc. MSI Circuits: Multiplexers, Demultiplexers, Decoders, Encoders etc.	10	Understand the design and applications of combinational logic circuits.
4	Sequential circuits: Latches and Flip-flops, Counters, Shift registers.	08	Acquire the ability to design and perform the analysis of different sequential circuits.
5	Analysis of sequential circuits: State tables and state diagrams. Timing circuits.	04	Acquire an understanding on the Analysis of sequential circuits.
6	Introduction to logic families, Semiconductor memories, ROM, PAL, PLA and Microprocessor.	08	Develop knowledge about the various techniques for IC designing for digital circuits.

Textbook:

1. Floyd T.L, Digital Fundamentals, 10/e, Pearson Education, 2011.

Reference Books:

1. Fundamental of Digital Electronics by A. Anand Kumar, 4/e Prentice Hall, 2016.
2. Digital Logic and Computer Design by M. Morris Mano, Prentice-Hall, 2015.
3. Digital Principles and Applications by Malvino & Leach, 8/e McGraw Hill, 2014.
4. Modern Digital Electronics by R P Jain, 4/e McGraw-Hill Education, 2009.
5. Digital Integrated Electronics by Taub & Schilling, McGraw Hill, 2008.

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