Course Name Digital Electronics

Course Code EC(EE)401

Course Credit 3

Contact Hour 3L

Prerequisite Knowledge in Electronics and Engineering Mathematics

Course Objective

The objectives of this course are

Course Outcome

On completion of the course students will be able to

1. Realize and describe the operation of even parity generation and checking circuit
2. Identify and describe the six basic logic gates and combinational circuits in digital electronics.
3. Realize and describe the operation of MUX, decoders, adder, subtractor, BCD adder
4. Realize and describe the operation of 4 bit magnitude comparator circuit.
5. Identify and realize circuits using flip-flop.
6. Realize and describe the operation of synchronous/asynchronous up/down counter.

CO Mapping with departmental POs

H: High, M: Medium, L: Low

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	H	H		H		M				L		H
CO 2	H	H			M	L				M		H
CO 3	H	H	M	L		M	M		L			H
CO 4	H	H			H	L			M		L	H
CO 5	M	H			L		H					H
CO 6	H	H	M		L		M			H		H

Course Content

Module I: Data and Number System **5L**

Binary, Octal and Hexadecimal representation and their conversion, BCD, ASCII, EBDIC, Gray codes and their conversion, Signed binary numbers representation with 1's and 2's complement methods, Binary arithmetic.

Module II: Boolean algebra **5L**

Various logic gates and their truth tables and circuits, Representation in SOP and POS forms, Minimization of logic expressions by algebraic method, K-map method.

Module III: Combinational circuits **5L**

Adder and sub tractor circuit, Circuit of Encoder, Decoder, Comparator, Multiplexer, De-Multiplexer and parity Generator.

Module IV: Memory Systems **4L**

RAM, ROM, EPROM, EEROM

Module V: Sequential circuits **6L**

Basic memory elements, S-R, J-K, D, and T Flip-flop, various types of Registers, Counters & their design, Irregular counter, State table & State transition diagram, Sequential circuit design methodology.

Module VI: Different types of A/D and D/A conversion techniques. 4L

Module VII: Logic Families 5L

TTL, ECL, MOS & CMOS, their operation and specification.

Text Books

1. Digital Principles & Application, 5th Edition, Leach & Malvino, Mc Graw Hill Company.
2. Modern Digital Electronics, 2nd Edition, R.P. Jain. Tata Mc Graw Hill Company Limited.
3. Fundamental of Digital Circuits, A. Anand Kumar, PHI.

Reference Books

1. Digital Logic Design, Morries Mano, PHI.
2. Digital Integrated Electronics, H. Taub & D. Shilling, Mc Graw Hill Company.
3. Digital Electronics, James W. Bignell & Robert Donovan, Thomson Delman Learning.
4. Fundamental of logic Design, Charles H. Roth, Thomson Delman Learning.