DIGITAL & ANALOG CIRCUITS

Course Code	20EE3403	Year	II	Semester	II
Course Category	Professional Core	Branch	EEE	CourseType	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	BEEE
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	TotalMarks:	100

Course Outcomes
Upon successful completion of the course, the student will be able to
CO1 *Understand* the basic concepts of digital and analog fundamental circuits (L2)
CO2 *Apply* the basic knowledge of digital fundamentals for implementation in digital applications.(L3)
CO3 *Analyze* different digital circuits for digital applications. (L4)
CO4 *Develop* various digital and analog circuits using OP-AMP. (L3)
CO5 *Compare* the performance of various ADC and DAC Circuits using OP-AMP.(L4)
CO6 *Ability to* do various problems in digital and analog circuits and submit a report.

Mapping of course outcomes with Program outcomes(CO/PO/PSO Matrix)

Note:1-Weakcorrelation2-Mediumcorrelation3-Strongcorrelation

*-Averagevalueindicatescourse correlationstrengthwithmappedPO

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2	3				3								2	1
CO3		3			3							3	2	1
CO4	3				3							3	2	1
CO5		2			3								2	1
CO6									3	3			2	1

Syllabus		
Unit No.	Contents	Mapped CO
I	**Digital fundamentals:** Binary Systems,Boolean Algebra, Minimization of Functions Using Boolean Identities and Karnaugh Map(4,5 Variables),CMOS Logic families	CO1,CO2 CO3 & CO6
II	**Combinational Logic Circuits:** Arithmetic Circuits, Code Converters, Decoders. Encoders, Multiplexers, De-Multiplexer, Parity Generators and Checkers	CO1,CO2 CO3 & CO6
III	**Sequential Logic Circuits:** Latches and Flip-Flops, Shift-Registers, Counters, Propagation Delay, Setup and Hold Time.	CO1,CO2 CO3 &CO6

IV	**Operational Amplifiers:** Review Of Op-Amp, Summing ,Averaging & Differential Amplifiers Differentiators, Integrators, Active filters (LPF,HPF,BPF,BSF), Sinusoidal Oscillators, Schmitt Triggers	CO1,CO4,CO 5&CO6
V	**Data Converters:** Sample and Hold Circuits, DAC & ADC Characteristics,R–2R Ladder DAC,ADC's-Integrating, Successive Approximation, Flash Type, Dual Slope.	CO1,CO4, CO5&CO6

LearningResources
TextBooks
1. MichaelD.Ciletti,M. MorrisMano,Digital Design,4/e.PearsonEducation, 2007.
2. RamakanthGayakward, Op-Amps and Linear Integrated Circuits, 4/e, Pearson Education, 2007.
ReferenceBooks
1. D Choudhury Roy, Shail B. Jain, Linear Integrated Circuits, New Age International, 2003.
2. Thomas L Floyd ,Digital Fundamentals, 11th Edition **,**Pearson education 2015.
e-Resources&otherdigitalmaterial
1. http://www.ece.ubc.ca/~saifz/eece256.html
2. http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT%20Guwahati/digital_circuit /frame/index.html