1.	Title of the course	VLSI Circuits for Signal Processing
2.	Course number	EE522L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To EE5037/11
6.	To be offered by	Department of Electrical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	CoT
9.	**Course Objective(s):** To introduce the design and development of VLSI architectures for signal processing, image processing and communication algorithms.	
10.	**Course Content:** Basics of digital circuits, computer arithmetic, graphical representation of DSP algorithms, signal flow graph (SFG), data flow graph (DFG) and dependence graph (DG), critical path, retiming of DFG, Critical path minimization by retiming, loop retiming, cutset retiming, design of pipelined DSP architectures, parallel realization of DSP algorithms, unfolding theorem, loop unfolding, parallel implementation of FIR filters, DCT and DFT architectures, area minimization by folding, folding formula, delay optimization by folding and lifetime analysis, pipelining architectures for FIR filters, DCT and DFT, real time application design.	
11.	**Textbook(s):** 1. Koren I, *Computer Arithmetic Algorithms*, 2nd Edition, Universities Press (2018). 2. Parhi K K, *VLSI Digital Signal Processing Systems: Design and Implementation*, 1st Edition, Wiley (2007).	
12.	**Reference(s):** 1. Pirsch P, *Architectures for Digital Signal Processing*, 1st Edition, Wiley (2009).	