1.	Title of the course	VLSI Fabrication Principles
2.	Course number	EE547L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To EE5036/16
6.	To be offered by	Department of Electrical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** To introduce the details of the various processes and techniques involved in fabricating nano scale devices.	
10.	**Course Content:** Introduction: historical developments, modern CMOS technology, clean rooms, wafer cleaning; Silicon growth, oxidation & doping: growth of silicon, Czochralski and float-zone methods, ion implantation, dopant diffusion; Lithography: optical lithography, light source, masks, exposure systems, basics of optics, resists, mask engineering, advanced techniques like e-beam and x-ray lithography, soft lithography, nano imprint lithography; Thin film deposition: physical vapour deposition (sputtering, thermal evaporation, pulsed laser deposition), chemical vapour deposition, atomic layer deposition; Etching: wet etching, dry etching; Bonding and packaging: wire bonding, packaging hierarchy, various considerations and types.	
11.	**Textbook(s):** 1. Ghandhi S K, *VLSI Fabrication Principles: Silicon and Gallium Arsenide*, 2nd Edition, Wiley-Blackwell (1994). 2. Plummer J D, Deal M D and Griffin P B, *Silicon VLSI Technology: Fundamentals, Practice, and Modeling*, 1st Edition, Prentice Hall (2000).	
12.	**Reference(s):** 1. Sze S M, *VLSI Technology*, 2nd Edition, McGraw Hill Education (2017).	