1.	Title of the course	RF and Mixed Signal Design
2.	Course number	EE543L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To EE5049/16
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 fundamental principles of operation and design of mixed-signal and RF circuit building blocks and their use in circuit design.	
10.	**Course Content:** Basic concepts of wireless communication systems design, transceiver architectures, design flow for RF and mixed signal circuits and systems, technological issues related to CMOS based RF circuits; On chip transmission lines and their properties, modeling of lumped and distributed RF circuits; On chip CMOS low noise amplifiers, power amplifiers, mixers, detectors and switches; Brief review of S/H characteristics and quantization noise, ADC and DAC specifications, ADC and DAC architectures, brief review of OP-AMP based ADC and DAC; Ring-oscillators, LC Oscillators, ring and LC oscillator based voltage controlled oscillators, simple PLLs, PLLs, delay locked loops.	
11.	**Textbook(s):** 1. Razavi B, *Design of Analog CMOS Integrated Circuits*, 2nd Edition, Tata McGraw-Hill (2017).	
12.	**Reference(s):** 1. Caverly R, *CMOS RFIC Design Principles*, 1st Edition, Artech House (2007). 2. Chi-His L R, *RF Circuit Design*, 1st Edition, John Wiley & Sons (2009). 3. Razavi B, *RF Microelectronics*, 2nd Edition, Prentice Hall (2014). 4. Rogers J and Plett C, *Radio Frequency Integrated Circuit Design*, 2nd Edition, Artech House (2010).	