1.	Title of the course	RF Microelectronics
2.	Course number	EE544L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To EE5048/16
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 design of Radio Frequency microelectronic Integrated Circuits (RFICs) to meet a high demand for cost-effective solutions for mobile communications and ubiquitous access to information.	
10.	**Course Content:** Basic concepts for transceivers: non-linearities, inter-symbol interference, phase noise in oscillators, sensitivity and dynamic range, image rejection; Modulation: choice of digital schemes for optimum power and spectral efficiency in wireless systems; Transceiver architectures: super-heterodyne, direct conversion, low-IF; Design of CMOS integrated blocks: low-noise amplifier, up- and down-converters, voltage controller oscillators, phase detector, charge pump filter, phase locked loop, frequency synthesizer, power amplifiers; Design practice: design of CMOS building blocks for RF transceivers with Cadence and ADS.	
11.	**Textbook(s):** 1. Lee T, *The design of CMOS Radio-Frequency Integrated Circuits*, 2nd Edition, Cambridge University Press (2004). 2. Razavi B, *RF Microelectronics*, 2nd Edition, Prentice Hall (2012).	
12.	**Reference(s):** 1. Crols J and Steyaert M, *CMOS Wireless Transceiver design*, 1st Edition, Kluwer Academic Publishers (1997). 2. Egan W F, *Practical RF System Design*, 1st Edition, Wiley (2003). 3. Gu Q, *RF System Design of Transceivers for Wireless Communications*, 2nd Edition, Springer (2006). 4. Rohde U, Whitaker J and Bucher T, *Communications Receivers: Principles and Design*, 2nd Edition, McGraw-Hill (1996).	