SUBJECT NO-EC60296, SUBJECT NAME- MIXED SIGNAL AND RF DESIGN
LTP- 3-0-0,CRD- 3

SYLLABUS :-

Pre-requisites: EC21002 and EC31003Introduction to Mixed-signal design; Advanced data converters: Working principle and architecture of a folding-and-interpolation ADC, Design of sample and hold amplifier, Design of folding amplifier and interpolation network, Design of decimation filter, Working principle and architecture of a Sigma-delta ADC, Design of basic and multistage sigma-delta converters, Working principle and architecture of a pipeline ADC, Design of one-and-half-bit converter, Working principle and various architectures of high speed DAC, Working principle and architecture of a high resolution DAC; Clock and timing: Block diagram of a PLL, PLL based frequency synthesizer, Application and block diagram of a DLL, Design of a multiphase generator; Implementation of system on a chip and the associated issue: Precautionary measure for integrating analog and digital modules within an IC, Signal integrity, floor planning and physical design of mixed signal IC design; Overview of RF system: Introduction to RF Transceiver architectures, Multiple access techniques, Different wireless standards, Various modulation techniques used in RF system; Aspects and considerations of RF design: Low voltage and low power design, RF-models of devices; Building blocks of RF: Design of oscillator and mixer, Frequency synthesizer, Design of low noise amplifiers, Design of narrowband and wideband amplifiers, Design of high efficiency power amplifier, Matching network design; RF system design and testing: Design of RF system, Noise and distortion measures and mitigation methods.