VASAVI COLLEGE OF ENGINEERING, IBRAHIMBAGH, HYD - 31
DEPARTMENT OF ELECTRONICS & COMMUNICATION
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Name of the Subject : Analog IC Design ***PI19PC130EC***

Why this course Analog IC Design is important for ME (ES&VLSI) students?
Why I want to teach this course?

It was in the 1980s that many experts *predicted the demise of analog circuits*. Digital signal processing algorithms were becoming increasingly more powerful while advances in IC technology provided compact, efficient implementation of these algorithms in silicon. Many functions traditionally implemented in analog form are now easily performed in digital domain. With IC technology evolving rapidly, it was felt that all processing would eventually occur digitally. But what happened to these predictions? *Why are analog designers in such a great demand today?* After all DSP and IC technologies have advanced tremendously, making it possible to realize processors and SOCs containing millions of transistors and performing billions of operations per second. This tremendous progress did not confirm the earlier predictions - why? Analog circuits have proved *fundamentally* necessary in many of today's complex, high performance systems.There are many applications where it is very difficult or even impossible to replace analog functions with their digital counterparts regardless of advances in technology. To indicate a few instances, let us consider the following:
At a microscopic level, all signals occurring in nature are analog. Direct digitization is very very difficult unless the raw signals are properly conditioned before digitizing. Digital communications/ data transmissions encounter a lot of distortion and attenuation over long distances. This needs high speed analog processing for amplification and removing distortion. Disk drive electronics deals with millivolt signals while retrieving stored data which requires analog processing .Signals picked up by the antenna of an RF receiver have amplitudes of only a few micro-volts and a center frequency of > 1 GHz accompanied by lot of noise. It is impossible to process these digitally. Similarly several sensors are analog in nature. Surprisingly all high speed data transmission on the microprocessor internal buses (memory and core) employ analog principles viewing high speed signals as analog and VLSI interconnects as transmission lines and estimating crosstalk delay, noise etc. It is said that ***" high speed digital design is in fact analog design".*** Analog design requires i) intuition to understand circuit topologies, ii) rigor in analyzing circuits and iii) art in designing. As I like understanding circuits intuitively, I would like to teach this course satisfying the above requirements. Such a course with deep understanding will fetch high tech core jobs for students.

(Prof. N.S.Murthy)