13-EC562 CMOS MIXED SIGNAL CIRCUITS

SYLLABUS

Data Converter Modeling and SNR: Sampling and Aliasing: A modeling Approach, SPICE models for DACs and ADCs, Quantization noise, Viewing the quantization noise spectrum using simulations, quantization noise voltage spectral density, Data converter SNR: an overview, Improving SNR using averaging, Decimating filters for ADC, Interpolating filters for DACs, Using feedback to improve SNR. **Submicron CMOS Circuit Design:** Submicron CMOS overview and models, Digital circuit design, Analog circuit design. **Implementing Data Converters:** R-2R topologies for DACs, Op-Amps in data converters, Implementing ADCs. **Noise-Shaping Data Converters:** Noise-shaping fundamentals, Second-order noise-shaping, noise-shaping topologies. **Integrator-Based CMOS Filters:** Integrator building blocks, filtering topologies, Filters using Noise-shaping.

TEXT BOOKS

1 R. Jacob Baker, “CMOS: Mixed-Signal Circuit Design”, Wiley-Student Edition, IEEE Press,

REFERENCE BOOKS

1. Behzad Razavi, "Principles of Data Conversion System Design,"John Wiley & Sons.
2.P. Allen and D. Holberg, “CMOS Analog Circuit design,” Oxford Press.
3. E. Bogatin, “Signal and Power –Simplified,” 2nd edition, Prentice Hall.