

Course Title: The Principle of Signal Processing and Systems **Course Code: EEA 191**

Course Background / Summary:

In the realm of Very Large-Scale Integration (VLSI), analog mixed-signal (AMS) circuits play a critical role in enabling the functionality of modern electronic systems. Designing and verifying these complex circuits requires specialized knowledge and skills. This course delves into the intricacies of custom analog mixed-signal VLSI design and verification, providing participants with the expertise needed to develop robust and reliable AMS circuits.

Course Objectives:

- Understand the significance of signal processing and systems in various applications.
- Grasp the fundamental principles of signals, their properties, and classifications.
- Acquire skills in time-domain and frequency-domain analysis of systems.
- Explore methods for designing and analyzing linear time-invariant systems.
- Gain proficiency in applying signal processing techniques to real-world problems.

Target Audience:

- Electrical engineers seeking to enhance their understanding of signal processing and systems.
- Telecommunications professionals interested in signal analysis and manipulation.
- Audio and acoustic engineers working with sound processing and analysis.

Course Duration: 3 Days

Course Contents

1.0 Introduction to Signal Processing and Systems: Importance and Applications

2.0 Signal Properties and Classifications: Continuous vs. Discrete, Deterministic vs. Stochastic

3.0 Signal Transformation Techniques: Fourier Transform, Laplace Transform, Z-Transform

4.0 Time-Domain Analysis of Systems: Convolution, Impulse Response, Step Response

5.0 Frequency-Domain Analysis of Systems: Frequency Response, Bode Plots

6.0 Linear Time-Invariant (LTI) Systems