ELE 436: ANALOG MOS VLSI ENGINEERING (elective)

**Credit:** 3 hours.

**Catalog Description:** Introduction to analog MOS (nMOS and CMOS) circuits. MOS transistor as both a switch and a linear device. Different MOS circuits such as amplifiers, switches, comparators, sensors, D/A-A/D converters, multipliers, and neural networks are investigated.

**Prerequisites:** ELE 330 or consent of department.

**Textbooks(s) and/or Other Required Materials:**

**Topics Covered:**

1. CMOS Layout Design (4 hour)
2. R and C components and analysis (2 hours)
3. MOS devices, and SPICE Modeling (4 hours)
4. Noise analysis (4 hours)
5. CMOS Analog Circuits (18 hours)
6. BiCMOS (2 hours)
7. Data converters (DAC and ADC) (6 hours)
8. Examinations (3 hours)

**Class/Laboratory Schedule:**

- **Lecture:** 2.5 hours/week
- **Lab:** none

**Course Objectives and Relationship to Program Outcomes:**

1. Addresses the fundamental concepts of Electronic Circuits (Outcome A, B, C, I, K).
4. Performs several circuit simulations and layouts at lab sessions. (Outcome A, B, C, E, K).

**Coverage (and level) of ABET Outcomes:** A (2), B (2), C (2), E (2), F, (1), G (1), H (1), I (2) J (1) and K (3).

**Contribution of Course to meeting the Professional Component:**

Engineering Topics: 100%

**Date:** June 2004.