

類比積體電路 (Analog Integrated Circuit)

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助教: 鄒伊泰 (電機 III 館博理館 415 室) r3943045@ee.ntu.edu.tw

Date: 1:00 PM ~ 4:00 PM, Saturday

Place: 電機 II 館 144 室

Webpage: <http://www2.ee.ntu.edu.tw/~r3943045/aicd>

Course Description:

This course deals with the design and analysis of linear analog integrated circuits using MOS technology. Following topics will be covered: MOS transistor model; single stage and two stage amplifiers; source coupled pairs, temperature and supply independent biasing; operational amplifiers; wideband amplifier; frequency response, feedback concepts, feedback amplifier theory and design, root locus; noise in integrated circuits.

Prerequisites: 電路學、電子學二、工程數學—微分方程

Textbook:

"Analysis and Design of Analog Integrated Circuits," Gray, Hurst, Lewis and Meyer, 4th edition, John Wiley & Sons, 2001

Reference:

"Design of Analog CMOS Integrated Circuits" Behzad Razavi, McGraw Hill, 2001

Grade:

Homeworks:	30%
Midterm:	30%
Final:	40%

Course Outline

- "Models for Integrated-Circuit Active Devices," 1.1 - 1.8
Large-signal behavior of MOS transistor, small-signal model of MOS transistor
- "MOS Integrated-Circuit Technology," 2.2, 2.8 - 2.10
Active device in MOS integrated circuits, passive components in MOS technology
- "MOS Amplifier Design," 3.3 - 3.5
- "Current Mirrors, Active Loads and References" 4.1 - 4.4
- "Operational Amplifier with Single-Ended Outputs" 6.3, 9.4, 9.6, notes
- "Output Stages," 5.1, 5.3 - 5.5
IC realization of class A, class B, and class AB output stages
- "Noise in Integrated Circuits," 11.1 - 11.4