

The Hong Kong University of Science and Technology

UG Course Syllabus

Practical Considerations of Analog Integrated Circuit Design

ELEC4450

3 Credits

Pre-requisites: ELEC3400

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Course Description

The performance of analog integrated circuits is fundamentally tied to the behavior of key building blocks, such as current mirrors and differential pairs. These components depend critically on the matching properties of paired MOSFETs. In advanced CMOS technology, these properties are influenced not only by channel width and length but also by layout-dependent effects and parasitic elements unique to scaled processes. This course explores the impact of these phenomena on analog circuit behavior, equipping students with practical methodologies to mitigate their influence and optimize circuit design.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)
Lab 1 Report	6%
Lab 2 Report	12%
Lab 3 Report	12%
Project Report	35%
Final Examination	35%

Required Texts and Materials

Lecture notes will be available on the Canvas course webpage.

Additional Resources

- [Alan Hastings, *The Art of Analog Layout \(2nd edition\)*, Pearson Prentice Hall, 2006](#)
- [Short Course from Prof. PE Allen](#)
- [gm/id note from Prof. Bernhard Boser](#)