

The Hong Kong University of Science and Technology

UG Course Syllabus

CMOS VLSI Design

ELEC 4410

3 Credits

ELEC 2400

Name: Khawar Sarfraz

Email: eesarfraz@ust.hk

Office Hours: Tuesdays, 3pm-4pm

Course Description

CMOS process and design rules; MOS device electronics; CMOS circuit and logic circuit characterization and performance estimation; VLSI design and verification tools. Laboratory work and the course project will be centered on industry standard tools using the commercial TSMC 180nm CMOS process.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)
Project	21%
Labs	14%
Mid-term Examination	25%
Final examination	40%

Required Texts and Materials

Jan M. Rabaey, Anantha Chandrakasan and Borivoje Nikolic, Digital Integrated Circuits – A Design Perspective, Second Edition, Prentice Hall, 2003.

Additional Resources

K. Martin, "Digital Integrated Circuit Design", Oxford, 2000.

K. Abbas, "Handbook of Digital CMOS Technology, Circuits, and Systems", Springer, 2020.

H. J. M. Veendrick, "Nanometer CMOS ICs: From Basics to ASICs", 2nd Ed., Springer, 2017.

N. H. E. Weste, D. M. Harris, "CMOS VLSI Design: A Circuits and Systems Perspective," 4th Ed., Addison Wesley, 2011.

S. M. Kang and Y. Leblebici, "CMOS Digital Integrated Circuits", 3rd Ed., Mc Graw Hill, 2003.

H. Kaeslin, "Digital Integrated Circuit Design from VLSI Architectures to CMOS Fabrication", Cambridge University Press, 2008.

J. E. Ayers, "Digital Integrated Circuits: Analysis and Design," CRC Press, 2005.

I. E. Sutherland, B. F. Sproull, and D. L. Harris, "Logical Effort: Designing Fast CMOS Circuits," Morgan Kaufmann, 1998.