

ELE734 – Low Power Digital Integrated Circuits

- **Course Outline**

<http://www.ee.ryerson.ca/undergraduate/dcd/ele734.html>

- **Key Knowledge to Be Acquired**

The design of Digital CMOS integrated circuits. A MOS transistor is studied using I-V equations, and the different areas of operations are modeled. The static (DC) and dynamic (transient) behaviours for an important building block, a CMOS inverter, are studied in depth. Variety of design techniques, such as Static CMOS, Dynamic CMOS, and Transmission Gate are studied. Basic logic gates as well as combinational and sequential circuits are discussed. Arithmetic building blocks such as adders, multipliers, and memory elements are also studied.

- **Key Skills to Be Mastered**

Computer-aided design (CAD) tools from Cadence Design Systems for design and analysis of integrated circuits and systems. CAD tools for IC design are used extensively in both laboratories and course projects.

- **Potential Careers**

Integrated circuit engineers, RF circuit engineers, electronics system engineers, system integration engineers, electronics system test engineers, instrumentation engineers, embedded systems engineers, ...

- **Potential Employers**

Advanced Micro Devices, Cadence Design Systems, DALSA, Fresco Microchip, Gennum, Genesis Microchip, Kapik Integration, Mitel Semiconductor, MOSAID Technologies, PMC-Sierra, Research-in-Motion, ST Microelectronics, Snowbush IP, Zarlink Semiconductors, ...

- **Graduate Studies**

Carleton, Calgary, Ryerson, Toronto, Waterloo, UBC, McGill, etc., have strong graduate programs in microelectronics and RF microelectronics.