University Scene

Lynn Conway is compiling a major report for our May 1981 issue on the VLSI design courses being taught at over 50 universities. Her report will detail course contents, and will explain how others can start similar courses at their own schools or places of work.

The reports we have received about new university activities and VLSI design developments appear below. These reports are by no means exhaustive listings of what's taking place on the campuses!

New VLSI Design Courses

New VLSI design courses are being offered in 1981 by Dan Fussell, *University of Texas (Austin)*, Yashan Chu and H.C. Lin, *University of Maryland*, Tom Mitchell, *Rutgers University*, and Ken Perry, *Georgia Tech*.

Prof. Lex Akers of the Department of Electrical and Computer Engineering at *Arizona State University* reports that the VLSI design course he taught last fall will be repeated next fall, when other courses will be started on modeling and simulation of small-geometry devices, fabrication, physics of small devices, computer architecture and testing. Prof. Akers believes that students should receive a complete view of the VLSI development process.

The Electrical Engineering Department of the *State University of New York at Stony Brook* is offering a new VLSI design and processing course for spring 1981, in conjunction with General Instrument Corp. (GI) of Hicksville, Long Island. The course will include layout, design rules, chip processing, and an introduction to computer simulation techniques. The course will be taught by Prof. Stephen Sussman-Fort of Stony Brook and Dr. Kamal Rajkanan of GI. Student project chips will be fabricated at GI and tested at Stony Brook.

Analog MPC

Yannis Tsividis of *Columbia University* was on leave to M.I.T. last fall, and sent us the following report on the design class he taught there:

Implementing student designs on a multiproject chip has proven of great teaching value in a class on analog design for MOS LSI and VLSI, taught at the *Massachusetts Institute of Technology* last fall. Topics covered in the class ranged from device models, fabrication and layout, to detailed circuit design.

"After having worked with computer simulation and layout aids in homework problems, students designed novel circuits including several high-performance op amps and comparators, an A/D converter, a switched-capacitor filter, and a 1K dynamic RAM, as well as less conventional MOS circuits such as a V/I converter, an AC/DC converter, an AM radio receiver, a digitally controlled analog signal processor, and on-chip circuitry for measuring transistor capacitances. These circuits were laid out as part of an MOS multiproject chip. Several of the designs exhibit a remarkable degree of innovation; fabrication pending, computer simulation shows that some designs may be pushing the state of the art. Several designs are of interest to digital designers; in fact, the course has provided the knowledge and techniques needed for detailed digital circuit design at the gate level.

"The class has been taught for several years at Columbia and has included design projects, but without the multiproject chip implementation."