

2009 IEEE International Conference on Microelectronic Systems Education

(MSE 2009)

**San Francisco, California, USA
25 – 27 July 2009**



**IEEE Catalog Number: CFP09106-PRT
ISBN: 978-1-4244-4407-6**

Table of Contents

2009 International Conference on Microelectronic Systems Education—MSE'09

Scroll to the title and select a [Blue](#) link to open a paper. After viewing the paper, use the bookmarks to the left to return to the beginning of the Table of Contents.

Session 1: Multi-Core Systems

Session Chair: *Tina Hudson, Rose-Hulman Institute of Technology*

Undergraduate Dual-Core Prototyping and Analysis of Factors Influencing Student Success on Dual-Core Designs	1
<i>M.C. Johnson, E. Villasenor, O. Krachina, M. Thottethodi</i>	
FPGA-Based NoC-Driven Sequence of Lab Assignments for Manycore Systems	5
<i>C. Ttofis, C. Kyrkou, T. Theocharides, M.K. Michael</i>	
Multicore Education through Simulation	9
<i>O. Ozturk</i>	

Session 2: Tools for VLSI Education

Session Chair: *Mark Johnson, Purdue University*

DIAGNOZER: A Laboratory Tool for Teaching Research in Diagnosis of Electronic Systems	12
<i>R. Ubar, A. Jutman, J. Raik, S. Kostin, H.-D. Wuttke</i>	
Using Tablet PCs and Interactive Software in Integrated-Circuit-Design Courses to Improve Learning	16
<i>M. Simoni</i>	
Synopsys' Open Educational Design Kit: Capabilities, Deployment and Future	20
<i>R. Goldman, K. Bartleson, T. Wood, K. Kranen, C. Cao, V. Melikyan, G. Markosyan</i>	

Session 3: Posters

Poster Chair: *John Nestor, Lafayette College*

An Innovative Method of Teaching Digital System Design in an Undergraduate Electrical and Computer Engineering Curriculum	25
<i>O.B. Adamo, P. Guturu, M.R. Varanasi</i>	
Encouraging Reusable Network Hardware Design	29
<i>G.A. Covington, G. Gibb, J. Naous, J.W. Lockwood, N. McKeown</i>	
LOGSYS: A Simple Tool for Complex Student Projects	33
<i>B. Fehér, T. Raikovich, G. Dancsi, P. Laczkó</i>	
A Mixed TCAD/Electrical Simulation Laboratory to Open up the Microelectronics Teaching	37
<i>J.-M. Galliere, J. Boch</i>	
Teaching VLSI Design in 10 Weeks	41
<i>M.R. Guthaus</i>	
Full-Custom Design Project for Digital VLSI and IC Design Courses using Synopsys Generic 90nm CMOS Library	45
<i>E. Lyons, V. Ganti, R. Goldman, V. Melikyan, H. Mahmoodi</i>	

Project based Learning Experience in VHDL Digital Electronic Circuit Design	49
<i>F. Machado, S. Borromeo, N. Malpica</i>	
An FPGA-Based Wireless Network Capstone Project	53
<i>J.A. Nestor, C. Nadovich</i>	
Improvements to an Electrical Engineering Skill Audit Exam to Improve Student Mastery of Core EE Concepts	57
<i>D.W. Parent</i>	
From Gates to Embedded Systems: A Bottom-Up Approach to Digital Design	61
<i>G. Donzellini, D. Ponta</i>	
Improving Students' Hardware and Software Skills by Providing Unrestricted Access to State of the Art Design Tools and Hardware Systems	65
<i>M. Radu, C. Cole, M. Dabacan, J. Harris, S. Sexton</i>	
A Cross-Curriculum Open Design Platform Approach to Electronic and Computing Systems Education	69
<i>M. Ravel, M. Chang, M. McDermott, M. Morrow, N. Teslic, M. Katona, J. Bapat</i>	
Interactive Hands-On Tools as Learning Objects on Web Services	73
<i>T. Robal, A. Kalja</i>	
U-PAS: A User-Friendly ADC Simulator for Courses on Analog Design	77
<i>B.D. Sahoo, B. Razavi</i>	
Towards Heterogeneous Microsystems Design-for-Test in a Graduate Student Environment	81
<i>P.A. Stokes, R.E. Mallard</i>	
Vertical Integration of System-on-Chip Concepts in the Digital Design Curriculum	85
<i>Y. Tang, L.M. Head, R.P. Ramachandran, L.M. Chatman</i>	
Teaching Embedded System Concepts for Technological Literacy	89
<i>M. Winzker, A. Schwandt</i>	
Project based e-Learning: A New Education Technique for Distance Learning in Smart Sensors Systems	93
<i>S. Yurish</i>	
Incorporating Real World Integrated Circuit in a Liberal Arts Computer Science Program	97
<i>P. Zhao, D. Moshier, M. Fahy</i>	
FreePDK v2.0: Transitioning VLSI Education Towards Nanometer Variation-Aware Designs	100
<i>J.E. Stine, J. Chen, I. Castellanos, G. Sundararajan, M. Qayam, P. Kumar, J. Remington, S. Sohoni</i>	
Microelectronics Global Diffusion through Education	104
<i>N. Ekekwe, A.C. Agu, C. Ekekwe</i>	
Extension of Micro/Nano-Electronics Technology Towards Photonics Education	108
<i>F. Uherek, D. Donoval, J. Chovan</i>	
A Novel Approach to Teaching Microprocessor Design Using FPGA and Hierarchical Structure	111
<i>R. Paharsingh, J. Skobla</i>	
CNT Logic Knowledge Module Integrated in Digital CMOS Logic Design Course	115
<i>A. Kumari, S. Bhanja</i>	
Benefits Derived from Restructuring the Practical Component of an Introductory Course in Electronic Communication Systems	118
<i>L.A. Clarke, J. Skobla</i>	

Microsystems, Microsensors and Microactuators: Research and Education 122
M. Husak, J. Jakovenko

Session 4: Novel Curricula

Session Chair: *John Lockwood, Stanford University*

The Robot Competition: A Recipe for Success in Undergraduate Microcomputers Courses 126
J.A. Berlier, J.M. McCollum

Working with Industry to Create a Test and Product Engineering Course 130
T.A. Hudson, B. Copeland

Integrating Embedded Computing Systems into High School and Early Undergraduate Education 134
B. Benson, A. Arfaee, C. Kim, R. Kastner, R. Gupta

Author Index