Alaa El-Din Hussein

Address : KFUPM, P.O.Box: 1294, Dhahran, 31261, Saudi Arabia.

Email : husseina@kfupm.edu.sa

Voice : (+96650) 907-0344

Areas of Strength

- Digital Systems Design
- Analog Circuits Design
- Transistor Physics and Circuit Operation (MOS and BJT)
- Sigma-Delta Frequency Synthesizer
- Analog-to-Digital Converter
- Analog and Mixed Signal Simulation tools for several commercial flows
- Semiconductor Processing

Employment Record

Assistant Professor   *KFUPM, Dhahran, Saudi Arabia, October 2003 – Present*

- Teaching circuits analysis, analog electronics, digital electronics, instrumentation and industrial electronics courses for graduate and undergraduate students
- Online courses development
- Participated in several microelectronics and multidisciplinary research funded projects
- Short courses and workshop offerings in microelectronics and instrumentation

Postdoctoral Fellow   *University of Waterloo, Waterloo, ON, Canada, January 2003 – June 2003*

- Designed / participated in designing building blocks for optical transceivers

Design Engineer (Co-Op)   *Research In Motion , Waterloo, ON, December 2000 – August 2001*

- Designed / participated in designing analog / digital building blocks for Sigma-Delta Frequency Synthesizer
- Testing and Characterization of Sigma-Delta Frequency Synthesizer

Design Engineer (Co-Op)   *Texas Instruments Inc. , Dallas, TX, March 2000 – September 2000*

- Designed Sigma-Delta modulator for RF Frequency Synthesizer
- Testing and Characterization of Sigma-Delta Frequency Synthesizer

Canadian Microelectronic Corporation   *University of Waterloo, Waterloo, ON, Canada, September 1998 – December 1998*

- Cadence support for the VLSI research group

Teaching Assistant   *University of Waterloo, Waterloo, ON, Canada, January 1998 – August 1998*

- Fundamentals of Electrical Engineering (instructing and marking)
- Electronic Devices (instructing and marking)

Teaching Assistant   *Ain Shams University, Cairo, Egypt, December 1992 – July 1997*

- Tutoring and marking analog electronics, digital electronics, and communication systems courses
- Tutoring , marking, and designing lab experiments for analog electronics, digital electronics, and communication systems

Professional Affiliations

- Institute of Electrical and Electronics Engineers 1998 – Present
- Egyptian Syndicate of Engineers 1992 – Present

Education

Ph.D. Electrical & Computer Engineering, September 1997 – September 2002.

University of Waterloo, ON, Canada.

Thesis: Design and Analysis of Fractional-N Frequency Synthesizers for Wireless Communications.

Course Work :
- RF Integrated Circuits
- Digital Integrated Circuits Design
- Computer Arithmetic

Projects :
- Design of 1.8 GHz CMOS Voltage Controlled Oscillator
- Low Power Divider for RNS
- A New Algorithm for Division in Residue Number System (RNS)

Courses Average Grade: 93%

Master of Science Electronics & Communications Engineering, September 1993 – December 1996.

Ain Shams University, Cairo, Egypt.

Thesis : Modeling and Characterization of VLSI MOSFET for CAD Applications.

Course Work :
- Analog MOS and Bipolar Integrated Circuits
- Optimization Techniques for Solving Engineering Problem
- Theory and Applications of Semiconductor LASER Electronics
- Advanced Semiconductor Processing Technologies

Courses Average GPA: 4.0/4.0

Bachelor of Science Electronics & Communications Engineering, September 1987 – July 1992.

Ain Shams University, Cairo, Egypt, **GPA 3.85/4.0**

Excellent with honours (ranked as the 4th out of 120 colleagues)

Projects :
- Design and Implementation of Optical Communication System. *(Grade: Excellent -190/200 – ranked as the 1st out of 120 Colleagues)*

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Funded Projects	
	• "Low Power Low Voltage Analog Computational Unit," Nov. 2010 - Oct. 2012, NSTP
	• "CMOS Configurable Analog Building Block," Sept. 2010-Aug. 2012, NSTP
	• "Design of UAV control system," Sept. 2009-August 2011, NSTP
	• Design of Dual-Mode Bluetooth/WLAN Channel-Select Filter for Direct Conversion Receivers (18 months, 400K SR Budget)
	• "CMOS Low-Pass Filters for Dual Bluetooth/WLAN Direct-Conversion Receiver", Sept. 2006 – Feb. 2008, KFUPM
	• "High Precision 3-D Power Line Electromagnetic Field Sensor", Sept. 2006 – August. 2007, KFUPM
	• "High Precision 3-D Power Line Magnetic Field Sensor", Sept. 2005 – Feb. 2005, KFUPM
	• "Online Course Development for Industrial Instrumentation Course", June. 2009 – May 2010, KFUPM
	• "Online Course Development for Electronics II Course", June 2005 – May 2006, KFUPM

Thesis Supervision

"An FPGA Based Digital Modulation Classifier," M.Sc., 2011

Teaching

- The courses taught are EE200 (Digital Circuits Design), EE203 (Electronics I), EE204 (Electrical Circuits for non EE), EE205 (Electrical Circuits II) , EE303 (Electronics II), EE434 (Industrial Instrumentation), EE445 (Industrial Electronics) , and EE541 (Digital Systems Design)
- Two online courses have been developed for EE303, and EE434.
- A partial development for EE203, EE303 and EE445 lab has been done.
- Tutorials for LabVIEW and CAD tools have been offered to my students and capstone students several times.
- A two weeks short course on "Advanced LabVIEW" was offered.
- A two days workshop on "LabVIEW" was offered.
- Prepared EE Bachelor Degree Program for Hafr Al-Batin Community College (HBCC)

Computer Skills

Learning Platforms	WebCT/Blackboard
Programming Languages	LabVIEW, Matlab, C/C++, PASCAL.
CAD Languages	Behavioural modeling languages (VHDL, HDL-A), SPICE language.
CAD Tools	**Tanner EDA** (Analog Design and Layout), **Cadence** (Analog Artist® circuit design environment, Virtuoso-XL), **Synopsys** (Digital Synthesis), **ANACAD** (ELDO), **OrCAD** (PCB design tools), **ViewLogic** (Design entry and Digital Simulation), **LabView**
Operating Systems	Unix (Solaris1.x, Solaris2.x, HPUX), Microsoft Windows, IOS, and android.
Platforms	Ipad, PC, Workstations (SunSPARC & HPPA).

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Awards	• KFUPM- College of Engineering best departmental service award (2006/2007) • KFUPM - College of Engineering best service award (2004/2005 and 2005/2006) • Ontario Graduate Scholarship for Science and Technology (OGSST) 2000 – 2001 • Ontario Graduate Scholarship (OGS) 1999 – 2000 • Faculty of Engineering Scholarship (FOE), awarded by the University of Waterloo 1998 – 1999
Committee Services	• Served as a member and chair for many adhoc and standing committees at the department and college level. • Served as the conference secretary, organizing and steering committee member for the 18th International Conference on Microelectronics (ICM'06) which was held under the patronage of His Royal Highness Prince Muhammad ibn Fahd ibn Abdulaziz Al-Saud in December 2006 at KFUPM. • Prepared the ICM 2006 conference material for publishing in IEEE xplore. • Served in the local arrangement committee in the first and second Saudi Engineering Forums held at KFUPM. • Served in the local arrangement committee in almost all of the IEEE Saudi Technical Exchange Meetings (STEM) held at KFUPM since 2003. • Served in the arrangement of almost all of the End of Year Party for the College of Engineering since 2004.
Publications	• Munir A. Al-Absi, Alaa Hussein and M. Taher Abuelma'atti, "A New Novel Current-Mode Very Low Power Analog CMOS Four Quadrant Multiplier", Accepted for publication (2012) • H. Alzaher, A. Hussein, and N. Tasadduq, "A Dual-Mode Bluetooth/WLAN Channel-Select Filter for Direct Conversion Receivers", IEE Proceedings Circuits, Devices and Systems, Volume 5, Issue 3, (2011), P.189-195. • Alaa E. Hussein, Hussain A. Alzaher, and Noman A. Tasadduq, "A CMOS Channel Select Filter for Dual Mode Bluetooth/WLAN Direct-Conversion Receiver", IEEE International Conference on Microelectronics 2008 • A. E. Hussein and M. I. Elmasry, "A ROM Based Fractional-N Frequency Synthesizer for Wireless Communication," Midwest Symposium on VLSI, August 2002, Tulsa, U.S.A. • A. E. Hussein and M. I. Elmasry,"A Fractional-N Frequency Synthesizer for Wireless Communications," IEEE International Symposium on Circuits and Systems, May 2002, Arizona, U.S.A. • A. E. Hussein and M. I. Elmasry, "Low Power Analog-to-Digital Converter for Wireless Communication," 10th ACM Great Lakes Symposium on VLSI, March 2000, Chicago, U.S.A. • A. E. Hussein, M. A. Hasan, and M. I. Elmasry, "A New Algorithm for the Division in the Residue Number System (RNS) For Low Power Applications," CCECE'98, May 1998, Waterloo, ON, Canada. • A. Hussein, H. Haddara, and M. El-Said, "A New Approach for HDL-A Modeling MOSFET Ion-Implanted Layers in CAD Applications," International Conference of Microelectronics, December 1996, Cairo, Egypt.